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## PREFACE.

HEREWITH we present our friends with our GUIDE for 1876. Great pains have been taken to include in this book varied and definite information in regard to all departments of Church Furnishing and Decoration, whether in the direct line of our own trade or not. This information in regard to goods in which we do not deal is inserted to make the book complete and valuable, and worthy of preservation for reference.

We have to say of the firms whose cards appear in the Guide, that great care has been taken to select those whose well-known character and standing is a sufficient guarantee for the fulfillment of all they promise. We do not believe that better or more satisfactory work in their respective departments can be obtained anywhere, than will be furnished by these firms.

The introductory article on the Canon of Taste in Church Furnishing, has been prepared with much care, in the hope that it may prove useful, not only for the information which it conveys, but for its suggestions as to the principles which ought to govern the construction of Church Edifices. We believe that the article will be found a time-saving compendium, even to those who have access to all sources of information on these subjects, and that the general suggestions will be recognized as pertinent and timely.

We desire to take contracts for the entire Furniture of Churches, including the Pews, Pulpits, Altars, Chairs, Stained Windows, Communion Tables and Service, Bells and miscellaneous conveniences, and the entire furnishing of the Sabbath School Room, Vestry and Pastor's Study.

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## The Canon of Taste in Church Architecture and Furnishing.

GOOD taste, in the abstract, is hard to define.\* Of a given thing, or a given person, we may say that it is in good taste, or that he has good taste, but what is good taste? There is no lack of definitions. Literature is full of them. There is scarcely a writer of *belles lettres* who does not, at one time or another have occasion to express his idea of taste. But the definitions do not help us. Even the dictionary makers, whose business it is to consider them all, and express the pith of them in one sententious phrase, have made nothing very satisfactory out of them. Webster calls taste "The faculty of discerning Beauty, Order, Congruity, Proportion, Symmetry, or *whatever constitutes excellence*."

But what *does* constitute excellence? The definition implies that it may be Beauty, Order, Congruity, Proportion, Symmetry, or some or all of them, but the implication is equally strong, that, after all, there is some doubt about it.

Upon this subject, the various writers have each his own thought of more or less beauty or value, which each expresses with more or less felicity according to his degree; nobody, however, accepts the words of another to express his own notion of taste, and when the student of aesthetics puts a number of these definitions together, and sits down to study them, he finds, if he is a real student, and has accumulated any real wealth of experience, that none of them express the law of beauty as it has been revealed to him, and he presently finds himself compelled, as the rest have been, to abandon the formulas of others, and to appeal to his own consciousness as his ultimate arbiter.

Taste, above all other faculties of the human mind, is a matter of education, and as no two persons ever have precisely the same experience, it is unlikely that two persons will ever have precisely the same taste. Between persons of similar experience, no one but a person of better experience is competitor of education.

\*The following are the works which have been chiefly relied upon for the facts and definitions used in preparing this sketch: *Bingham*, Antiquities of the Christian Church; *Smith*, Dictionary of Christian Antiquities, vol. I, A to J; *Freeman*, History of Architecture; *Eastlake*, History of the Gothic Revival; *Ruston*, Stones of Venice; *Tyrwhitt*, Christian Art and Symbolism; *Clement*, Handbook of Legendary and Mythological Art; The Oxford Glossary; Webster's Dictionary.

tent to decide whose taste is the best. Natural endowments have comparatively little to do with the matter. Not that different persons do not greatly differ in their natural capacity to appreciate beauty, but that taste is so completely the creature of education, that sufficient experience will counterbalance almost any conceivable advantage in natural endowment. The wealthy and educated classes have better taste than their poorer neighbors, because they have more opportunity to see beautiful things, by which to form and correct their own ideal. Excepting natural objects—which we do not appreciate because they are so common—the most beautiful things are usually the result of much time and labor, so that only the rich can afford to have them, and a long line of wealthy and distinguished ancestors, especially if fixed in one spot, will hand down to their descendants such critical accuracy in judging of beauty and fitness, that all their surroundings will be recognized by the whole world as charming and appropriate.

Thus, as the different classes of men rise above each other in what is called social rank, they are almost certain to increase—not in manly or moral qualities, in usefulness or genuine worth, but—in taste. Within the several classes, individuals vary greatly among themselves in this, as in other qualities, but the judgment of an ordinary member of any class will usually be better than that of almost any individual, or any number of individuals of a class below him. The judgment of no one, however, will ever be equal in value to the general opinion of the class to which he belongs, because the experience of the individual can never be equal to the combined experience of the class. The ultimate arbiter, in matters of taste, will always be the general opinion of the highest and most cultivated circles, but as none but persons who are themselves highly cultivated, can usually know what that opinion is, or appreciate it, or understand it, it follows, as we have intimated—and the remark may apply not only to students of aesthetics, but to everybody—

The final criterion of taste that each person must appeal to his own consciousness, formed and educated by whatever influences are about him, as his criterion, and the best results are secured when each person *does* rely upon his own sense of the fit or the beautiful, and makes such selections as are pleasing to himself and his neighbors, with no regard to the opinions of those whose taste he may suppose to be better than his own.

But while it is strictly true that the best results are secured by each one's relying on his own judgment in these matters, it does not follow that certain suggestions may

not be made which all will recognize as indicating lines within which they would desire their own choice to be confined; and it has occurred to us that it would be possible, and, if it were judiciously and well done, useful, to make a few such suggestions upon taste in Church Furnishing and Architecture, as, without attempting to communicate what language alone can never convey, would still be a help to persons who, without the advantages of early cultivation, which wealth and leisure alone can procure, are called to serve upon committees in charge of erecting or furnishing churches. We say "Architecture," as well as "Furnishing," because Furnishing is really a part of Architecture; an off-shoot from it, and, if well done, wholly dependent upon it.

There is hardly a position more annoying and awkward than that of an ordinary Plain Man, if also a conscientious and sensible man, upon a church building committee in a country parish, or one of our new Western towns. With the desire to do his duty, and do it well, there is a painful consciousness that he does not know what the best thing is, nor even how to find out about it; that his work will probably be imperfect; that it will be exposed to public view, and to comparison with the work of others; and that when he has done his best, the result will be subject to the unfavorable—and possibly hateful—remarks of censorious persons.

1. Now, the real source of most of this embarrassment, is the sensitiveness of the Plain Man, as to the opinion of those whose taste he supposes to be better than his own; his friends from the city; the new minister to be called when the house is ready; his neighbor whose wife frequently visits the city herself; and above all, the older and wealthier congregation across the way. The true remedy for it is an utter and uncompromising disregard for these opinions altogether. Not that such opinions are not worth having; not that the judgment of such persons is not better than his own; but because it is impossible for him to tell what their judgment will be until he becomes as competent as they to form an opinion. The true course for Plain People—educating and informing themselves as well as they can—is to rely upon their own judgment in matters of taste; to make what suits plain people, themselves and their neighbors, and to let critics go; not in a spirit of pride and self-complacency, as if their opinions were better than others, but in a spirit of Christian humility, as if their opinions, though not the best, were the best to be had, and being offered in the right spirit, would be, like the widow's mite, acceptable and accepted.

2. The next suggestion—and it is not placed first, because it can never have full effect while there is a necessity for that just made—is that the question of taste depends upon the question of use. The legitimate use of a church is not a place of assembling for sociables, charades, lectures, church fairs, "exhibitions," concerts, singing schools, or primarily, for Sunday schools, church conferences, or even sermons, but for **WORSHIP**. Discarding, therefore, any question of the propriety of using the church for secular purposes, it is evident that its legitimate use is so immeasurably more important than any other use to which it can ever be put, that nothing else ought to be considered in building or furnishing it. Whatever, therefore, tends to excite in the soul feelings of humility, awe, gratitude, reverence, adoration, and other emotions which make up the act of worship, is desirable and

The legitimate; whatever objects lessen or check the influence of these mate use of the emotions—whether by thoughts of their niggardliness, unsuitableness, church. beauty, costliness, or by arousing feelings of complacency, pride, triumph, mortification, or envy—whatever, in short, tends to withdraw the soul from the contemplation of God, and direct it to itself or elsewhere, is undesirable and inappropriate.

3. There is one other general suggestion, which, although really included in the last, may be overlooked, and so shall be repeated, and that is, that the edifice should be wholly within the means of the congregation, so as to be fully paid for as the work proceeds. Let it be understood, now, that we are not discussing Christian morals, or expediency, or finances, or anything else except taste. All these other topics are out of our province. But in nothing do church committees more often

Churches deceive themselves, in their endeavors to so build as to secure the should be within the approbation of men, than in the matter of cost. They suppose that means of the congregation. when their work is done, all men will be filled with admiration, and will say, "How noble and beautiful a Christian work!" What, in fact, they will say, is, "See that church! Those people were so proud they tried to do something they couldn't do, and now they've got a mortgage on their house so big they have to starve the minister!"

These three suggestions amount to saying simply that churches should be built, *first*, so as to please those who build them and worship in them; *second*, so as to induce a religious spirit in the worshippers; *third*, so as to be within the means of the congregation. Churches which are thus built will certainly be in good taste. They will harmonize with the circumstances of the congregation. But

it is evident that the application of these principles will result in a variety in church edifices as great as the variety of circumstances and culture of the congregations. What would be tasteful and appropriate for one congregation would be untasteful and inappropriate for another. Good taste requires that each congregation shall build according to its own best knowledge. We build in bad taste when we do not come up to our own knowledge, and so do not satisfy ourselves; or when we overstep our means; or when we try to ape a culture we do not understand.

But a congregation may increase its knowledge, and so its capacity, to know and enjoy the appropriate; and when they are preparing to build, should do so by all means. This increase of culture, however, to be valuable, must be general, and is by no means obtained by sending off one or two members of the "committee" to make a flying examination of half a dozen crack churches in a large city. Not that we discourage visits to model churches. All the best artistic culture must come by seeing what has been done by others; but what is specially desirable is a *general* culture; and to obtain this we know no better way than the purchase and circulation among the congregation for a year or so before building, of copies of the best illustrated popular works on Architecture. Get the latest and the best, but above all get them well illustrated.

But as a preliminary to such studies, we are inclined to say a few words here which may be helpful, at least to those who do not accept our advice and consult better authorities.

With due regard to the three suggestions already made, there are four qualities, one of which any feature of church architecture must have, to be in good taste:

1. It must be now useful, and not evidently inappropriate; or,
2. It must be approved by the usage of the Apostles or the primitive church; or,
3. It must be connected with other time honored and hallowed associations; or,
4. It must be an appropriate symbol of some article of Christian Faith.

Passing over the first of these heads, we propose to give;

*Under the second, some account of the Primitive Churches and Furniture;*

*Under the third, some account of The Rise and History of Gothic Architecture, and its Principal Characteristics;*

*Under the fourth, a list of Christian Emblems, with Their Signification.*

## I. The Architecture and Furnishing of the Primitive Churches.

This division of our subject should be full of comfort to plain people. Our Lord, the Apostles, and the primitive Christians were poor, and generally uncultivated. It has been supposed by some that for the first two or three ages Christians had no distinct places of worship. This opinion has been based on certain passages in the earlier Christian writers, but the weight of authority is on the other side. Many unmistakable allusions to regular places of worship appear before the close of the first century. St. Paul undoubtedly alluded to some improper use of the sanctuary, in the passage, 1 Cor., xi, 22, "Have ye not houses to eat and drink in? or despise ye the church of God?" Possibly the Apostle did not approve the exercises at their church sociables! but it is evident that the Corinthians had a church. The first church seems to have been on Mount Sion; the "upper room" so often mentioned in the Acts of the Apostles. Bishop Mede, and after him, Mr. Bingham, consider this room to have been the place "where the Apostles were assembled when the Holy Ghost came upon them, Acts, ii; where our Savior celebrated his last supper; where he appeared to his disciples two Sundays, one after another, after his resurrection, John xx; the place where the seven deacons were elected and ordained, Acts, vi; and where the first council of Jerusalem was held, Acts, xv, which place was afterward enclosed with a goodly church, called the Church of "Mount Sion."\*

Simplicity of We have no knowledge of the forms of these churches, their utensils the earliest or their decorations; but as the congregations were poor, unlettered, and humble, we may be sure that their churches corresponded with their circumstances. Very likely they resembled the churches on a frontier Home Missionary station. As soon as their rising numbers began to draw upon themselves the attention and the persecutions of the civil authorities, the churches were not only plain, but secret, and private houses and upper rooms were often, and perhaps usually employed.

\* Bingham, Antiquities of the Christian Church, 278.

During the first, second, and the early part of the third Christian centuries we get only such glimpses of the churches, their decoration, and the methods of worship as have served rather to provoke controversy than to establish principles. But they had churches of some sort, for Eusebius,\* speaking of the peaceable and prosperous time just preceding the persecution of Diocletian, remarks that their *ancient churches* were not large enough to receive the Christians, who were compelled to build more ample and spacious ones in every city. In the persecution of Diocletian—beginning A. D. 303—the churches throughout the world were ordered to be torn down, but upon the accession and conversion of Constantine, immediately after, were rebuilt with increased magnificence. At this time, from the writings of Eusebius, who died about A. D. 340, St. Chrysostom, who died about A. D. 411, and others, we are able to construct a very clear account of the various parts of the churches, their uses, utensils, and general appearance.

The churches of the Christians having been just destroyed by the Imperial order, it was natural, upon the despised creed becoming the religion of the State, that such reparation as was possible should be made for the destruction of their property. It is to this feeling that we attribute the setting apart of the Basilikas, or "Royal Halls," for Christian worship. These buildings, being used for court rooms, and the transaction of public business generally, were found scattered throughout the Empire. It is in them that we find the Christians very generally worshiping at the dawn of authentic history regarding their churches. Their use was so general as to cause the name to be attached, in many instances, to buildings erected exclusively for Christian use. Indeed the "Basilikas" almost, of themselves, became a distinct order of Christian Architecture.

But simultaneously with the general use of the Basilikas, there began an era of general and magnificent church building. The Empire, at this period, was wealthy and luxurious, and upon the accession of the wealthy and influential classes to the ranks of the Christians, the sacred buildings began to receive all the adornments which piety or public spirit had previously lavished on heathen temples.

The little that we have to say as to the outward appearance of these churches, may be better reserved for the next division of our subject. The ground plans of

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\* Cited by Bingham.

the churches, although differing in detail—many of them being heathen temples, consecrated and adapted to Christian worship—were substantially alike, since all were arranged with reference to the same divisions of the worshipers, and similar methods of worship. For the purposes of sanctuary, which the sacred place afforded to criminals, the church was held to extend to the outer wall which enclosed not only the church proper, but the court, or area in front of it, the dwellings of the clergy, the baptistery, vestry, and other outbuildings. The form of the church proper was usually oblong, or “ship-like,” although instances are abundant of octagonal and circular churches, while the form of the cross, which

seems to have been frequently adopted from the first, became, after a  
certain time, perhaps as common as any other. The common custom, especially  
in the eastern parts of the Empire, seems to have been to pray towards the East,  
and the churches were generally, though not always, arranged with reference to  
that custom, the main entrance being at the west end, and opposite the chancel,  
and altar or communion table, which were placed at the east. Instances are not  
wanting, however, of churches facing in all directions.

Before proceeding with our description, we will give, for convenience sake, the definitions of a few architectural terms.

**AISLES**—[Latin, *ala*, a wing.] Interior divisions of churches running parallel with the nave, and separated from it by rows of pillars.

**AMBO**—[Greek, *ambon*, a raised stage.] An oblong pulpit or reading desk.

**APSE**—[Greek and Latin, *apsis*, a tying, a hoop, a wheel.] The semi-circular or polygonal prolongation of the nave, roofed by a half dome in which were placed the altar, or communion table, the Bishop's throne, and the seats for the clergy. The aisles sometimes ended in Apses.

**BEMA**—[Greek *bema*, a step, or raised stage.] Same as chancel.

**CHANCEL**—[Latin *cancelli*, lattices, cross-bars.] The part of the church between the altar, or communion table, and the railing that incloses it; or more usually, the whole space inclosing the altar or communion table. So called from the *cancelli*, or lattice work, which often inclosed it, and screened it from view.

**CHOIR**.—[Greek *Choros*, a dance, accompanied with song.] The place for singers, the front part of the nave; sometimes the chancel itself.

**CLOISTERS**.—[Latin *claustum* from *claudere*, to shut.] Covered arcades along the

walls of the church, or its courts, or in its porches, designed for places of seclusion and meditation.

**COURT.**—[Greek, *chortos*, Latin *chora*, *cohors*, an enclosed place.] An enclosed space, wholly or partly surrounded by walls of a building. Not usually covered.

**NAVE.**—[Latin, *navis*, a ship.] The middle or body of the church, extending from the chancel to the main entrance; the point between the aisles.

**NARTHEX.**—[Greek, *narthex*; Latin, *ferula*; originally, a tall plant, the pith of whose stalk preserved the fire a long time; thence, a long, narrow box.] A long, narrow portico, across the front of the church, usually entered by three doors from the porch, and opening, by three corresponding doors, into the nave and the two aisles.

**OUTER NARTHEX.**—The exterior narthex, a long narrow strip, sometimes railed off from the court, and leading to the inner narthex. There were sometime several divisions, called Nartheces, about the church. The name was applied to any division of the proper shape.

**PORCH,** } [Latin, *porta*, a gate.] Covered vestibules, or places for walking, about **PORTECO.** } the entrances of the church. The term "porch" would be usually applied to a more confined space about the front entrances, while long, covered ways especially if extending along the sides of the building, between rows of pillars, would be called porticos, or colonnades.

The various portions of the churches were set apart for the use of the various orders of worshipers, who were separated by lines drawn with a sharpness and a strictness of which modern churches afford no example. Of these divisions, the most important were:\*

1. **THE CLERGY**, including several grades, with the Bishops at the head.
2. **THE FAITHFUL**, who were such as had been baptised and confirmed—complete and perfect Christians.
3. **THE CONSISTENTES**, from the Latin *consistere*, to stand together, the fourth and highest order of penitents, who were allowed to remain and stand with the faithful, after the dismissal of the rest, and during the explanation of the most

\* It is proper to say that the writer in Smith's Dictionary of Christian Antiquities doubts whether the separation of these orders of the Penitents was ever enforced as strictly as the text following Bingham, would indicate.

mysterious doctrines of the Church, and even the administration of the sacraments.

4. THE SUBSTRATI, or Penitents of the third order, so called from the Latin *substernere, substratum, to prostrate*, from their custom of prostrating themselves before the priest to receive his benediction and the prayers of the faithful, at the conclusion of that portion of the service which they were admitted to hear, and which was addressed to the penitents, and confined mainly to moral exhortation.
5. THE CATECHUMENS, or Second Order of Penitents; so called from the Greek *Catechumenos, instructed*, especially by means of questions and answers. This term was properly applicable to all seekers of Christianity below the ranks of the faithful, but seems to have been especially applied to the second order of Penitents, as the other Orders had special appellations.
6. THE MOURNERS, the lowest order of Penitents.
7. Besides these, the lowest of whom, even, would be included under the generic name of Christians, and be, in some sense, under the general care and protection of the Church, was the promiscuous crowd of Jews, Heathens, Infidels, Heretics, together with some persons convicted of peculiarly atrocious sins, who were only permitted to hover round the outer doors of the church, exposed to the inclemency of the sun and storm, and allowed to gain but occasional glimpses of the interior, through the various doors and over the heads of the various orders of penitents.

Church of We are now ready to go on with our description of the church of the the Fourth fourth century. If we had lived at that time, and been minded to attend church, we should, upon entering the great western gate, have found ourselves in a large open court, enclosed on one side by the church, and on the other three sides by high walls. Around the whole or part of the enclosure, next to the walls, would have been a portico, covering, probably, a number of cloisters, and the roof of which would have been supported on the inside by a row of pillars. In the centre

The Court was usually a large fountain, or cistern, at which the worshipers might perform their ablutions on entering the church. The open space about the fountain was called the "Locus Hyemantum," or, as we should call it, the place of those who are out in the cold. Passing on to the church, we should, had we been of the number

who were permitted to enter the sacred edifice, have made our way through a crowd of sorrowing souls, whom the stern discipline of the church only permitted to occupy the covered portico, and to peer through the three open doors into the mysterious regions beyond. The cloisters would have probably been occupied by holy men, engaged in expounding the plainest doctrines of the Christian religion to the trembling sinners who sought their ghostly counsel. This portion immediately in front of the church doors, was sometimes called the *Exterior Narthex.*

Entering by either of the three main doors, we should have found ourselves in the *Narthex* or *Ferula*, among the *Catechumens*, who, having expressed a desire to obtain the New Life, and been somewhat informed of the nature and the mode of the way of Salvation, were receiving instruction in the more simple tenets of *The Narthex*, the *Faith*, and were admitted, during the early part of the service, within the sacred building, to hear the prayers and receive the instructions of the reader or preacher:

Still a little to the east, and immediately behind the *Ambo*, or reading-desk, which was placed directly in the middle of the nave, was the place of the *Third Order of Penitents*, the *Substrati*, who, having now received considerable instruction, and continuing earnest in the desire for more light, were become special objects of interest and solicitude to the *Faithful*, and were already permitted to receive some small foretaste of the joys in store for them, by catching from the very foot of the desk, the *Gospel*, as read from the *Sacred Book*, and receiving, prostrate upon the earth, at their dismissal, the benediction of the holy man. Partitions, or railings, separated this order of Penitents from the *Catechumens*, in the *Narthex*, on the *Naos*, or one hand, and the *Faithful* and *Consistent* within the precincts of the *Temple*. main temple itself, on the other. The *Second* and *Third* orders of the *Penitents*, were sometimes called the *audientes*, because they were permitted to remain and hear some part of the service.\*

\* The things which were concealed from the *Catechumens* were: "1. The manner of administering baptism. 2. The function of chrism, or confirmation. 3. The ordination of Priests. 4. The manner of celebrating the Eucharist. 5. The liturgy or divine service of the church. 6. And, for some time, the mystery of the Trinity, the Creed, and the Lord's Prayer, till they became greater proficients, and were ready for baptism." *Bingham: Antiquities of the Christian Church*, 468. He quotes, in proof, order of the first council of Orange, St. Basil, St. Austin, St. Cyril, Theodoret, Nazianzen, and others. The rules in regard to the part of the service which the penitents were allowed to hear, varied considerably in different countries, at different periods. All unbaptised persons were at some times and places, excluded from viewing the celebration of the Eucharist, and at other times and places there was more liberty allowed than we have described. We have given what we suppose to have been the most authoritative practice at the principal centres, about the end of the fourth century.

Ranged at the sides, and in front of the Ambo, were the main body of the Faithful—the baptized and confirmed—and either mingled with them, or placed by themselves at the left, the Consistentes, the immediate candidates for those ordinances. To these only, reverently placed in humble positions about the Ambo, were fully unfolded the awful mysteries of the Faith. There were no seats, for there was no sitting, and the ordinary posture of devotion was kneeling, relieved on Sundays and Feast-days by standing, with humble prostration upon the earth, whenever it was desired to signify special humiliation and contrition.

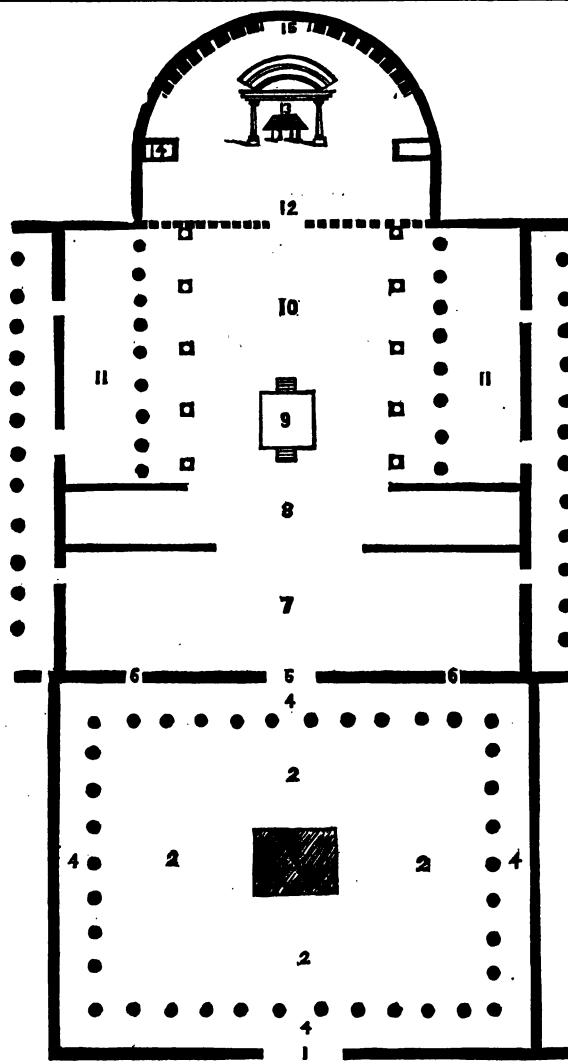
The Place of Women. On either side of the church were the galleries for the women, who always worshiped apart. These galleries, of course, were divided to correspond with the various ranks of the men below. At the rear were cloisters for meditation, reading, and prayer. The married women were divided from

The Bema, the unmarried. At the east end of the nave, from which it was separated, usually by a lattice-work partition, was the bema, or chancel, with the bishop's throne generally at the extreme end, and the seats for the inferior clergy on either side, and about the chancel rail. Either at the extreme end of the chancel, in which case the bishop's throne was on one side, or in the middle of the chancel, was the altar, or table of our Lord, as it is indifferently called by the Fathers. The place of the singers appears at this time to have been usually, or at least often, in or about the ambo. The Scriptures were read from the ambo, from which, also, were delivered whatever sermons or addresses were had previous to the dismissal of the catechumens. It is probable, also, that when any of the greater clergy desired to deliver a formal sermon to the Faithful alone, the ambo was occupied as a tribunal from which he could more readily be heard. The sacrament of the holy communion was administered every Sunday, the service, of course, being conducted within the chancel, from the steps of which, also, the bishop often, if not always, addressed the assembly.

PLAN OF AN ANCIENT CHURCH.

[From Bingham's Antiquities of the Christian Church.]

1. The Great Porch, or first entrance into the open court before the Church. Usually at the west end.
2. The Court. The Locus Hyemantum, or Place of the Outcasts.
3. The Fountain. Usually placed in the center of the court.
4. The Portico or Cloister, about the center of the area. That part nearest the entrance to the church, was the Locus Lugentium, or Place of the Mourners. It was sometimes called the Outer Narthex.
5. The great gate into the church.
6. The lesser gates on each side of the other. There were similar entrances from porticos at the sides of the church, marked in the plan, but not numbered.
7. The narthex, where the catechumens stood.
8. The place of the Substrati, or third degree of Penitents, behind the Ambo.
9. The Ambo or Reading Desk.
10. The Naos, or Temple, where stood the Faithful, and with them the immediate candidates for baptism.
11. Raised galleries for women.
12. The Bema, or Chancel, separated by a rail, or screen and gate, from the Choir or eastern end of the Nave.
13. The Altar or Communion Table.
14. The Prothesis, or table for offerings of bread for the Eucharist. The original of the Credence Table.
15. The Bishop's Throne, with chairs or stalls for the clergy on each side. There were also often rows of stalls variously arranged, for the inferior clergy and singers, just without the Chancel rail, in the outer Chancel or Choir, sometimes separated from the Nave by rails not shown in the cut.



The furniture of the church, with the exception of the pews, which were wanting, was much as at present, and included

1. **THE FONT**, which was large enough to admit of the immersion of the candidate, and usually placed in an outer building or baptistery.
2. **THE AMBO, OR READING DESK**, doubtless of various shapes, but apparently usually an oblong raised platform, surrounded with a railing, and reached by flights of steps from the front and rear.
3. **THE TABLE FOR OFFERINGS**, or Second Altar, as it was sometimes called, upon which the people deposited their gifts of bread for the communion. It was placed in or near the chancel. It was also called the Prothesis, and was the original of what is now called the Credence Table. There was another repository for offerings without the church.
4. **THE CHANCEL RAILING, AND GATES**.—Usually of lattice work, often very rich and expensive, so arranged as to screen the altar, or a portion of it, from view.
5. **THE SEDILIA**, or Seats for the Clergy, arranged at the sides and rear of the chancel, with the seats of the inferior clergy, probably, in front of the rail, in the outer chancel.
6. **THE BISHOP'S THRONE**.—A chair, large, and often magnificently ornamented and covered.
7. **THE ALTAR, OR COMMUNION TABLE**.—This was at first of wood, and afterwards usually of stone. And at first it seems to have been usually in the form of a table, but afterwards a structure built up like the altars in the Catholic and Episcopal churches of the present day. The altar was always covered with a cloth, which, in the wealthy churches, was magnificently embroidered and adorned. Upon it was raised a small cross, although the date at which this emblem was introduced in this place is disputed. Above the altar was sometimes suspended the silver effigy of a dove, as an emblem of the Holy Spirit, hovering over the sanctuary. There was also often erected over it a beautifully wrought silken canopy, supported upon slender pillars rising from each corner, and the whole was sometimes protected from the gaze of the profane by rich and heavy veils which wholly or partly concealed it.

The walls and roof of the edifice were adorned with texts of Script Decoration.

ture, emblems, gilding, mosaic, paintings of scenes in christian history, pictures and statuettes of saints and martyrs. It is, however, a disputed point at what time, and by what approval, these last were introduced.

This is substantially what we should have seen had we been permitted to enter one of the wealthy churches of the fourth century. Rich coloring, delicate carving, exquisite mosaics, embroidered veils, gold, silver, and precious stones were contributed and accepted without stint for the purpose of beautifying the sanctuary. The effect was doubtless gorgeous beyond what we can easily conceive. Not that all churches were like this. Plain and poor churches still existed in all parts of the Empire; but of these, as of the churches in the earlier centuries, we have little knowledge. It is probable that the general plan and divisions of the poorer churches were about the same, and that this general plan had gradually become settled in the course of the first three centuries. The sudden prosperity of the Christians would naturally bring with it this increase of magnificence, but it is entirely unlikely that any great changes in the general form would have been effected, especially without such opposition as would have left its marks in the ecclesiastical writings of the time. The churches, at this time, were used only for religious purposes. In spite, however, of the magnificence of these temples, there is contemporary evidence that with the new prosperity there had been some loss of ancient fervor.

"I would rather," said one writer of that time, "have wished to have lived in those days, when there were no such beautiful temples, but yet the church was crowned with Divine and heavenly graces; than in these days, when temples are adorned with all kinds of marble, but the church is deprived of all these spiritual gifts."

## II. Gothic Architecture—Its Rise, and Some of Its Characteristics.

The Gothic is at present almost universally accepted as the style of architecture most appropriate for christian churches. It will be interesting and useful to enquire what Gothic Architecture is, and how it came to be accepted as especially adapted to christian uses.

In the process of erecting an edifice "circumstances will continually occur in which two points must be connected, and that not by a third wall, but by something supported by the points to be connected."\* A window, a door, a roof, are examples of this necessity. To effect this connection there are precisely two ways, and no more—the ENTABLATURE and the ARCH.†

The entablature effects the union by simply laying upon the top of the Entablature and the two uprights, a third horizontal block. The arch effects it by a series of blocks resting on piers, and a keystone, and supported by mutual pressure. The entablature is generally employed in buildings of wood, the arch in buildings of stone or brick. In the most celebrated of the ancient buildings, however, the arch was not used, and in many countries, Greece, among others, it seems to have been unknown. The entablature, as developed in the architecture of ancient Greece, is the exponent of elegance, and grace. The arch is the exponent of majesty and strength.

The date of the invention of the arch in western Europe is uncertain. Its early use by the Romans seems to have been quite general, but after they became acquainted with Greece, and Grecian art, they appear to have relegated the arch, in a great measure, to sewers, cellars, and similar positions, where strength was desirable, rather than beauty, and, wherever ornament was desired, to have adopted the Grecian forms of entablature, either really and wholly, or else as an overlay, to cover up the more clumsy—though simple and majestic—arch, of which they seem to have been ashamed.

\* Freeman—History of Architecture.

† The Gable may be considered as an Entablature.

Forms of The entablature was the product of a warm climate. It was impossible, by its aid alone, and with the more durable materials, to enroof areas of any considerable size, or to raise successive stories to any considerable height. The characteristic of the beautiful architecture of Greece was low buildings, supported by a multitude of columns, and without roofs. Whenever it was necessary, awnings were employed to exclude the sun and rain. Variety was secured by the use, in different buildings, of the five well-known orders of columns, with their capitals, bases and cornices, and by elaborate sculptures wrought upon the stone walls. The continued use of the entablature was favored, not only by the warm climates in which architecture first received a high development, but by the fact that the ceremonies of the heathen worship did not require the assembling of large numbers or people within the temple walls, and therefore permitted those edifices in which the highest architectural effects were desired, to be of comparatively moderate size.

Advantages The advantages of the arch, however, were too obvious, in all cases of the Arch. where strength was an object, not to ensure its general adoption. Its use soon became general throughout the Roman world, but during the whole period of the splendor of the Empire it was the custom, while using the arch for the real construction of the building, to entirely cover the exposed portions with a purely ornamental veneering of Grecian columns and tables tied to the main structure, just as we now fasten a facing of stone to the front of an ordinary brick building. It was edifices of this kind that often surrounded and covered the gorgeous interiors described above.

This style, of course, was simply barbarous. It was a violation of the first and most easily recognized of all the principles of taste, which requires decoration to be simply added to the construction—not independent of it.

The real grandeur of Roman Architecture was seen, not in their palaces, and temples, but in their aqueducts and bridges. There were no meretricious attempts to obscure the simple majesty of the arch with unsightly, because unsuitable ornaments. Says Mr. Freeman :

" Few Roman productions are nobler than a genuine Roman building, altogether free from Grecian ideas, such, for instance, as the Pont du Gard in Languedoc, or the Aqueduct of Segovia. We here see only the square pier and the round arch standing forth, tier upon tier, in all their native boldness and purity. And the

bold, unbroken sweep of the round arch is in itself exceedingly striking, and can better dispense with decoration than any other architectural form. Both Grecian and Gothic buildings require a certain degree of ornament; the mere unadorned mechanical construction will not suffice; but a Roman arch is perfectly satisfactory, though not a particle of moulding or other enrichment is bestowed upon itself or its pier.”\*

The arch usually employed in the ancient buildings was the round arch. Instances, however, are not wanting of the use, in early days, of all, or nearly all, the forms hereafter mentioned. Their use, however, was only occasional, and in unimportant situations, not affecting the general style of the buildings, and not indicating the taste of the day. The changes in the form of the arch, which we are about to mention, are to be considered, therefore, as adaptations or introductions, and not inventions.

About a century after the death of Constantine, the Western Empire was overthrown by the Goths under the great Theodoric. The Gothic Kingdom of Italy endured—with many vicissitudes—till its overthrow by Justinian in 539. The uncultivated Northmen, first civilized by the arts of rich Italy, began to stamp their own character upon the architecture of the conquered country. Too simple themselves not to despise all falsehood and sham in art, the advance made by this people, was the abandonment of the false covering of Greek ornament, and the decoration of the arch according to its own principles. They saw that the construction and the decoration should be derived from the same source.

But the reign of Justinian, A. D. 527-565, under whom the whole Roman world was for a short time re-united, witnessed the beginning of a style of Christian Architecture wholly new, and which from his day has modified the architecture of the whole East. This was the style in which a magnificent dome is the central, principal, and overpowering object which strikes the eye. The Church of St. Sophia, dedicated about the middle of the Sixth Century, at Constantinople, still endures, and is now a Turkish Mosque. It was the first instance of a great dome surmounting the whole building, and forming its chief architectural feature. The ground plan of the building was a Greek cross—that is, a cross with four arms of equal length—and the dome rose over the point of inter-

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\* History of Architecture, 138.

section. This style is known as the Byzantine Architecture. Besides the grand central dome, other domes and half domes, often rose over other portions of the building, and filled up its angles.

The Byzantine Architecture, for a time, was somewhat employed in Western Europe, and indirectly modified the construction of many churches, of which it was not a prominent feature. In 568, however, three years after the death of Justinian, the Lombards crossed the Alps, and descended upon Italy, of the greater part of which they retained possession till their overthrow by Charlemagne, in 774.

We have just seen how the original Roman or Classical Architecture began to be modified by the ideas of the Goths and the Byzantines. From the conquest by the

The Roman- Lombards, and the speedy introduction of the arts of building into esque. Northern Europe, there came to be various well defined styles of architecture, all founded on the old Roman or Classical style, but modified in different ways by the different nations. These styles are all known as ROMANESQUE, that is, "like the Roman." Of these, the principal were

The Romanesque of Italy, or Lombard style, the Romanesque of Germany, the Early Romanesque of England, the Romanesque of Southern France, or the Provençal, and the Romanesque of Northern France and England, or the Norman. Besides these there was the Arabian Architecture of Spain, which, derived, in part at least, from the same Roman original, is as pronounced as some of the others, in its anticipation of Gothic features.

A few definitions will be of use to us.

**ABACUS**—[Uncertain derivation]. The upper plate upon the capital of a column.

**ARCADE**—[Latin *arcus*, a bow, an arch]. A series of arches supported by columns or piers, and either open, or backed with masonry. In church architecture an arcade almost always means a purely ornamental series of arches, attached to the exterior or interior walls of the building, precisely as the false Grecian fronts were attached to Roman arched buildings, described above.

**BUTTRESS**—[French *bouter*, to push, to butt.] A projecting support to the exterior of a wall. A marked feature of Gothic architecture, though seen in other styles, especially Norman, and sometimes wanting in Gothic itself.

**CAPITAL**—[Latin *caput*, the head]. The uppermost part of a column, pilaster, etc.

**CLERE-STORY**—[Clear story]. An upper story or row of windows rising clear above

the adjoining parts of the building. In church architecture, usually such an elevation of the nave, clear above the roof of the aisles.

**COLUMN**—[Greek *kellein*, to extend upward.] A cylindrical support for a superstructure of any kind. The column is composed of the Base, Shaft, and Capital. This word is very commonly used by Architectural writers to denote columns of the regular Classical proportions, as opposed to Pillar, a column of any proportion, and Pier, a square support of solid masonry. Of the three Grecian orders, the Doric varied in height from four of its own diameters, to six and a half; the Ionic, from eight and a quarter to nine and a half, and the Corinthian averaged about ten.

**CRUCIFORM**—[Latin *cruz*, a cross]. Like a cross.

**CUSP**—[Latin *cuspis*, a point]. A projecting point in ornamentation, or in an arch.

**FEATHERING**—[Saxon]. The ornamented cusps formed by the junction of small arcs. Used especially in referring to the ornamental work upon arches or windows.

**FOIL**—[Latin *folium*, a leaf]. The space *between* the cusps, in ornamental work, or in arches, windows, niches, &c. So called from the usual resemblance of these spaces to a leaf. The terms trefoil, quatrefoil, quinquefoil, &c., (three-foiled, four-foiled, five-foiled, &c.), as applied to window heads, arches, or ornamentations, indicate the number of foils.

**FOLLATION**—The act of forming leaf-like ornaments; or the ornaments themselves. Most frequently applied to leaf-like spaces for lights formed between the mullions of ornamental windows. Same as tracery.

**IMPOST**—[Latin *impositum*; placed upon]. The top of the pillar or other support which receives the weight of the arch.

**MULLIONS**—[Derivation uncertain]. Slender bars forming the divisions between the lights of windows.

**PIER**—[Greek *petra*, a stone]. A mass of solid masonry supporting an arch or other superstructure. See Column.

**PILLAR**—[Latin *pila*, a pillar]. An upright insulated support. See Column.

**PINNACLE**—[Latin *pinna*, feather]. A slender turret, elevated above the main building.

**SPANDREL**—[English *span*] The irregular or triangular space between the curve of

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an arch and the enclosing right angle, or the space between the outer mouldings of two contiguous arches, and a horizontal line above them.

**SPIRE**—[Greek *speira*, a coil, a spire]. A body that shoots up in a conical or pyramidal form. Higher than a pinnacle—a steeple.

**SOFFIT**—[Latin *suffixum*, fixed under]. A ceiling; especially the under side of an arch.

**TRACERY**—[Latin *traho*, to draw]. An ornamental divergence of the mullions, in a window, into arches, curves, and flowing lines, enriched with foliations. See *Foliation*.

**TRANSEPT**—[Latin *trans*, across, and *septum*, an enclosure]. Any part of the church that projects at right angles to the nave, and is of equal or nearly equal height to it. In a cruciform church, one or both the *arms* of the cross.

**TRIFORIUM**—[Latin *tri*, three, and *fores*, doors, from the three doors opening from the portico, or exterior narthex, into the nave and the two aisles]. The gallery or open space between the vaulting or arches and piers supporting the vaulting, and the roof of the aisle. See *Vaulting*.

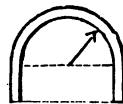
**VAULTING**—[Latin *volutum*, turned about]. A continued arch covering the whole building, and forming a roof of solid masonry. When there was a clerestory, the vaulting, of course, covered only the nave, and was supported, at the sides on arches, the piers or pillars of which divided the nave from the aisles. Between the tops of these arches and the roof of the aisles was often considerable space which was sometimes finished into a passage way called the triforium gallery. Sometimes this was extended over the nave so as to form a real gallery for worshipers, as in the ancient or modern churches. In the middle ages, however, the triforium was more usually a covered passage way, the vaulting descending so as to hide it from view from the nave. In such cases a large blank wall would be made which was usually covered, on the inside, by an ornamental arcade, and this *arcade*, which was a striking feature of the decoration of many churches, was itself often spoken of as the triforium. See *Triforium*.

**ARCHES.** Arches, while not varying at all in the principle of their construction, may be made to assume almost an infinite variety of appearance to the eye. This variety of appearance is obtained by modifications, 1. Of their shape; 2. Of their support; 3. Of their decoration.

1. THE SHAPE OF THE ARCH.—The shape of the old Roman arch is marked by a circle inscribed from a center midway between the tops of the imposts, thus forming an exact semi-circle. This may be varied, (a) by placing the center *above* the imposts, and allowing the arch, either to descend perpendicularly from the line of the center to the impost, and form the *stilted arch*, or to follow the line of the circle, and form the *horse-shoe* or *Moorish arch*, the impost being projected inwards to receive it; (b) by placing the center *below* the imposts, in which case the arch is lowered or flattened. The shape of all other arches is formed by the intersection of parts of circles drawn from two or more centers, as shown on next page. The various forms of single-pointed arches are formed by the intersection of arcs of circles drawn from *two* centers; the trefoil, quatrefoil, and other many-pointed arches are formed by circles drawn from more than two centers. In two-centered arches the centers may be placed either (a) at the junction of the soffits and the imposts, forming the equilateral arch; (b) within the soffits, forming the high-pointed, or *lancet arch*; and (c) without the soffits, in which case the arch will be flattened. These arches, again, may all be varied by placing the centers above or below the imposts, as in the case of the round arches.



Old Roman, or Round Arch.



Stilted Arch.



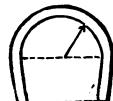
Equilateral Arch.



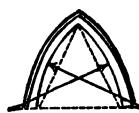
Drop Arch.



Trefoil Arch.



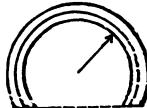
Horse-Shoe Arch.



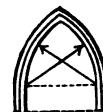
Lancet Arch.



Four Centered, or Tudor Arch



Moorish Arch.



Stilted Moorish Arch.

2.—**THE SUPPORT OF THE ARCH.**—This may be, 1. Part of a solid wall; 2. A square pier of masonry; 3. A square, polygonal, or cylindrical pier, with a capital, or base, or both, in which case it would be a pillar; 4. A column of one of the regular orders.

3.—**THE DECORATION OF THE ARCH.**—The old Roman arch is perfectly plain. The soffit is at right angles with the face. The first step in ornamentation is obviously to cut away the sharp corners by chamfers; the next to increase this effect by making the arch of different *orders*, that is, to form one or more projections on the soffit and support by turning the interior of the arch on a circle a few inches

*smaller*; a combination of these two forms the *receding arch*; the next step is the use of *mouldings*, round or otherwise, which may be either fastened upon the angles and the chamfered edges, as in the older styles, or actually cut into the material, so as to be wholly within the line of the arch, as in the Gothic. The last step is the addition of carving, either upon the keystone, the columns or their capitals, or the spandrels.

These different forms of the arch are given thus minutely in order to impart some idea of the infinite possibilities, both in construction and decoration, afforded by the introduction of the arch. Of more importance than any of these things, however, is the possibility of covering large spaces with few supports, which was utterly beyond the power of the architects of the entablature.

We are now ready to go on with our sketch of the rise of Gothic Architecture. Gothic architecture was no sudden outburst of invention of new forms. It had scarcely any one peculiarity which had not been anticipated in other styles. But when, by selecting one feature here, and another there, he had combined the things which really belonged together, although they had never been together, behold! the architect had created a new style.

We have no space for a description of the various styles of Romanesque architecture which were the precursors of the Gothic. A brief statement of the most marked peculiarities of some of them must suffice.

**LOMBARD, OR ITALIAN ROMANESQUE.**—In this style, the pillar was no longer restricted to the classical forms, (see Column, above,) but was made of any length required by the necessities of its position. Clustered columns, that is, several columns united, or apparently united, by a band, and together forming one pillar—a marked feature of the Gothic—cruciform ground plan, with moderate sized dome over the intersection; exterior ornamented with arcades; low roofs; sometimes a clere-story; sometimes a triforium gallery; frequent vaulted roofs, and above all a profusion of grotesque sculpture—principally fantastic heads of all manner of real and imaginary animals: all these were characteristic of this style of architecture. By far the most important innovation, however, was caused by the introduction of bells for the purpose of assembling the congregation, and which required the construction of the

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tower to sustain them, and thus gave the first impulse towards the upward pointing, the vertical lines which are the main feature of Christian, and especially of Gothic, architecture. Bells are supposed to have been first used for church purposes in Campania, Italy, some time during the sixth or seventh centuries. Hence their Latin name, *Campana*, and the architectural term for the bell-tower, *Campanile*, (Cam-pa-ne-la). These bell towers were not attached to the church, but were built at some distance from it. The famous leaning tower of Pisa is a campanile.

**PROVENCAL, OR THE ROMANESQUE OF SOUTHERN FRANCE.**—Low roofs ; cruciform, with octagonal or square tower at intersection, often covered with pinnacles ; peculiar arrangement of the apse ; vaulted roofs ; but an increased use of the entablature, and other indications of a return to the classical styles.

**ROMANESQUE OF GERMANY.**—Cruciform, with octagonal lantern at crossing ; almost universal vaulted roofs. Sometimes apses both at east and west ends (on account of a peculiar interior arrangement for two choirs). Sometimes two transepts, with their towers, in which case the eastern is always the larger ; external ornamental arcades ; clere-story ; triforium ; sometimes the pointed arch introduced ; a profusion of carving, but now foliage and vegetable forms, instead of animals, as in the Lombard ; but especially a multitude of towers and turrets about the east end, where the apse was almost always flanked by two towers, sometimes subordinate to, and sometimes overpowering the central lantern over the intersection of the cross. The bell towers were here attached to the church, and part of its construction.

**NORMAN, OR THE ROMANESQUE OF FRANCE AND ENGLAND.**—Cruciform, with massive square tower at the intersection, surmounted with a low spire ; few pinnacles or turrets ; clere-story ; triforium ; buttresses ; towers, when they appear, almost always marking the west end instead of the east, as in Germany ; profusion of ornamental work, especially of that kind which enriches, without imitating natural objects—that is, simple curved lines and chevrons, or *zigzags* ; an ornamental division of the west front into three or five parts, by which the doorway was prevented from becoming an important feature. It was, however, often highly ornamented.

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The above are a few only of the most striking characteristics of the styles of architecture which were the more immediate precursors of the Gothic. We have no space to follow the gradual change in the customs of the church which led to the abolition of the interior divisions so rigidly maintained at first. Gradually the interior arrangements assumed the forms known at the present day. The interiors, however, were highly decorated; in some styles, and at some periods, almost every foot of blank wall being covered either with ornamental arcades, ornamental panels, sculpture or carving; the vaulted roofs were supported not only by the side walls and arches, but by lofty pillars rising from the nave; the windows were richly stained, and the mullions woven into the tracery peculiar to the style.

We now come to the Gothic Architecture, which, however, was not Gothic at all, but simply German, being the final fructification of the various styles of Romanesque which first took definite form about the middle of the twelfth century, attained its highest perfection during the thirteenth and fourteenth; endured till the general Renaissance, or Revival of Learning, in the fifteenth, when it was overcome by the general taste for the classical—the Greek and Roman—a real step backwards in architecture, however beneficial in other respects; was dead and buried for three hundred years; began to turn in its coffin about the second quarter of the present century; has been fully resurrected within the last twenty-five years; and is now, somewhat modified by modern means and necessities, universally accepted as the best type of the christian church.

The peculiarities of the Gothic, as shown in the best examples, are

1. The pointed arch.
2. The round or octagonal abacus, important as tending to obliterate the *distinction between the arch and its support*.
3. The clustered pillar—not essential, but very common.
4. The entire abandonment of square edges; the universal use of the chamfer and of mouldings—the latter *always within the line of the surface*.
5. Vaulting—not essential, but very common, and essential to *perfection*, because the eye has then no resting place at the wall-plate.
6. The grand doorway, with receding pointed arches, richly moulded and decorated.
7. The high pointed gable.

8. The buttress.
9. Towers and spires of increased height and lightness.
10. The polygonal apse.
11. The arcade with the pointed arch.
12. The use of the shaft and arch in all decorative features, so as to give a principle of *unity* to the whole.
13. The clere-story in the large aisled churches.
14. The tracery of the windows. In the early styles the mullions formed into the shaft and arch, but gradually changing into foliation, or the similitude of all manner of leaves, and thence into the flowing, or flamboyant, (flame-like) curves, or the straight divisions of the "perpendicular" style.
15. The long rows of tall pillars in the interior—separating the nave from the aisles, or supporting the vaulted roof—with bell-shaped foliated capitals, and the general appearance of a long row of forest trees.
16. The general pyramidal shape of the whole edifice, as seen in the best examples.

But this is no place to describe a style of architecture by its technical peculiarities. An attempt to do so would result either in conveying false impressions, or involving the reader in hopeless confusion. The variety of architecture which can truly be called Gothic is almost infinite, and no one but a real antiquary is competent to determine it upon mere technicalities. We can, however, at once, give the reader the great, final criterion, by which, at last, the most learned antiquary must rest his decision.

The Horizontal  
principles in  
Ancient Architec-  
ture.

Where two faces of a structure, or any part of a structure meet, the sharp corner made by the impact of their two edges forms a LINE. When the eye of an observer falls upon any part of this line, there is an impulse, common to all humanity, to follow it to its end. If the eye rests upon a column, it instinctively follows it to the top. In the Greek temples the distinctive feature was a very long row of columns of the same height, near together, and supporting a continuous entablature. The length of the row of columns would always be much greater, often several times greater, than the height of a single column. The columns were so near together that they would appear to observers in most positions, like a continuous wall. The prominent line, therefore, upon which

the eye would naturally fall—and which, at any rate, it would seek, till found—would be the line of the ENTABLATURE, or the columns supporting it, viewed as a broad BAND. And this would be repeated, no matter how many stories or stages were piled one upon another. The eye would still follow the lines of the successive entablatures. In other words, the predominant feature of all the architecture of the entablature is the HORIZONTAL.

If the eye falls upon an insulated arch, it runs round it, following backward and forth, seemingly till satisfied that it has seen the whole. If the arch forms part of a structure, the eye follows it, till its legitimate connection with the rest of the building is found, when it leaps to the new object. The natural tendency of the eye is to wander over the building till the longest line, the most *striking feature* is found, and there to rest. In the Byzantine Architecture we have remarked that the most striking feature is the dome, upon which, when the eye finds it, it rests; and it is this feature which is carried away and remembered as the great thing about that building.

In the Lombard churches was seen the first dawning of a new style of distinctively *Christian* architecture. The Deities of the old worship were all about: in the air; in the sea; in the heavens; below the earth: nay, the earth itself was a Deity, and even the celestial beings were believed constantly to seek their favorite haunts on this earth, and were worshiped as actually dwelling within the temples erected to their honor.

The Christian, however, worshiped a God whose dwelling was in a house not made with hands, eternal in the heavens. The tendency of the worshiper was to look up, and of the teacher to point up, and gradually this idea crept into their buildings; first, perhaps, in the dome of the Byzantine; next, certainly, in the campanile, or bell tower of the Lombard; and following on in the towers of the Provencal and the Norman, the turrets, spires, and pinnacles of the German Romanesque, catching the pointed arch even from the Moors, Gothic Architecture the enemies of the Faith, till finally the architect becomes filled with development the magnificent conception of making every feature of his building—of the Vertical line. the tower, the turret, the pinnacle, the vaulted roof, nay the whole minster itself, with its spire almost piercing the clouds—mute teachers, forever pointing to the silent heavens, and all surmounted by the Emblem of the Christian Faith.

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The perfection of Gothic—or Christian—architecture, therefore, is that the eye whatever the part of the building on which it chances, at first, to fall, should be naturally led along, and find no resting place till it reaches the cross at the top of the spire. There may be round arches; there may be detached turrets; but the round arches should be so small as not to attract the eye and afford it a resting place; and the turrets should be so arranged as to lead the eye from one point to another, till the utmost height is reached. The arrangement of the interior must be corresponding, carrying the eye to the apex of the roof, the visible representation of the heavens. Whatever accomplishes these ends, is Gothic; whatever fails to accomplish them is less than Gothic.

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But it may be thought that if vaulted roofs, a forest of pillars, magnificent traceries, a lofty nave, gloomy aisles, and heaven-touching spires are requisite to Gothic architecture, it is useless for our struggling modern churches even to know what Gothic architecture is. To which it may be replied that, in the providence of God, it is certainly so ordered that the best architectural effects do cost a deal of money. The mediæval churches were built under great advantages. In the first place, the churches themselves were often richly endowed; in the next place, it was much more common then than now for wealthy persons to make *bequests* to churches; the statutes of mortmain, as is well known, were originally intended to prevent this practice; then everybody—from lowest to highest—was a believer and contributor, and each church had a monopoly of its own surroundings. No opposition churches were permitted to exist, and sufficient territory was attached to each church to ensure its support. Says Lowell, speaking of the Chartres cathedral,

" By suffrage universal it was built.  
As practiced then, for all the country came  
From far as Rouen, to give votes for God;  
Each vote a block of stone securely laid  
Obedient to the Master's deep mused plan."

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Finally the whole benevolent and religious spirit of the age was concentrated on the building of churches. In modern times it is not only divided between many competing churches in one town, but is further called away to the support of a multitude of benevolent objects which were wholly unthought of five hundred years ago.

But whatever money is within the reach of our modern churches, may be spent in taste. There may be pure Gothic with very little ornament. The lancet window—a pointed doorway with chamfered posts, and a few mouldings—high gables and a roof finished on the rafters—a plain octagon steeple, and stained windows—these constitute a Gothic church, not costly and impressive to be sure, but such as it is possible to have, adapted to the needs and the means of the congregation simple and tasteful.



### III. Christian Symbolism.

ALL oriental teaching is largely symbolic or parabolic. The Jewish dispensation A has often been called a religion of types and shadows. In the teaching of Jesus the symbol and the parable are the most usual figures. It was therefore not only natural but almost inevitable that the teaching of the early Christian church should be of a similar character. We do not, however, know at what time the churches acquired the custom of adorning their temples, or their sacred utensils, with the emblems of their faith. It is probable that it was done, at least to some extent, from the very first. Certainly the use of emblems—carved or painted—was fully established at the date of the earliest authentic accounts.

There are two principal reasons which account for the extensive use of emblems among the early Christians :

1. *The necessity of secrecy in times of persecution.* This also accounts for the obscurity and seeming mysticism of so many of them, which afforded instructed believers the means of a mutual recognition, or recalled to their minds the consolations of the Christian faith without attracting the attention of the persecutors. Who would discern, in the Ark, the symbol of the Body of the Christian Church ? or, in the Fish, the emblem of the Son of God ?

2. *The scarcity of books, and the general inability to read.* In an age when few besides the clergy could read at all, the value of some means of suggesting, through the eye, the various trains of Christian reflection is very apparent. We have remarked elsewhere that there has been a dispute as to the time when pictures and statuettes of saints and martyrs were first introduced. It seems probable, however, that upon the overthrow of the old civilization, and the decline of learning which followed, it was found necessary to take advantage of every possible method of instruction to impress upon and make permanent in the minds of the faithful the truths and the history of Christianity. It seems equally probable that in the countries where, and at the times when, piety and learning were at a low ebb—even among the clergy themselves—the use of these representations should have degenerated into

something like idolatry: the image only being seen while the thing symbolized was unknown or forgotten: and that the reformers of religion, coming at the time when the revival of learning, the invention of printing, and the general diffusion of knowledge had removed, in great part, the original reasons for their use, should have been inclined, in their iconoclastic zeal, to associate all art with iniquity, and to utterly banish it from Christian churches and Christian worship.

So much has been said only that we might suggest, in this paragraph, that in the overwhelming mass of modern literature, which prevents most people from reading anything well, there is a condition resembling that of the ancient times when the want of learning prevented most people from reading at all; and that the increased use of art and symbolism for the purpose of teaching Christian history and impressing Christian truth may be not only the natural outcome of our better modern culture, but a Providential adaptation of an efficient means to an end not otherwise attainable.

But religion can not be taught by symbolism unless the emblems be understood. The following is a list of some of the more common emblems, with their signification:

1. **THE NIMBUS.**—An appearance of light, or a circle or disk intended to represent such an appearance, around the head. Signifies **SANCTITY**. Is applied to saints, and other holy persons, as well as to the Divinity.
2. **THE AUREOLE.**—Like the nimbus, except that it envelops the whole person. Signifies **DEITY**. Is applied only to the three persons of the Godhead, and to the Virgin Mary represented as intimately associated with the Son.
3. **THE GLORY.**—A combination of the nimbus and the aureole. Signification same as that of aureole.

#### EMBLEMS OF GOD THE FATHER.

4. **THE HAND ISSUING FROM THE CLOUDS.**—Represented either entirely open, in the act of **BESTOWING**, or with fingers arranged according to the Greek or Roman gesture of **BENEDICTION**.
5. **THE FACE, OR BUST, IN THE CLOUDS.**—Not used in modern times.
6. **THE TRIANGLE.**—Represented with the name of the Father, in Hebrew, in the center, and surrounded by rays, the triangle symbolizing the Trinity, and the whole sometimes contained in the circle, the emblem of eternity.
7. **THE FLOOD OF LIGHT.**—(*Ezek. viii. 2.*)

#### EMBLEMS OF GOD THE SON.

8. **THE FISH.**—The Greek word for fish (*icthus*) is composed of the initial letters

of the Greek words which mean "Jesus Christ, Son of God, Savior." The fish is one of the most ancient and most common Christian emblems, and has many significations, for which see below.

9. **THE CROSS.**—Christ's suffering ; the humanity of Christ.
10. **THE LAMB.**—This was the type of the Savior in the Old Testament. See also John i. 28. Bearing a cross, or banner, called the Lamb of God. Represented with a nimbus or aureole.
11. **THE LION.**—“The Lion of Judah.”
12. **THE VINE.**

#### EMBLEMS OF THE HOLY SPIRIT.

13. **THE DOVE.**—The usual representation.
14. **A MAN, OR A CHILD.**—(Mediæval.)—Often shown accompanied by a dove.

#### EMBLEMS OF THE TRINITY.

15. **THREE TRIANGLES.**
16. **THREE CIRCLES.**—Circles and triangles were often intermingled.
17. **THREE HUMAN BEINGS,** accompanied respectively by the appropriate symbols of the three persons of the Trinity.
18. **THREE FISHES.**
19. **TWO HUMAN FIGURES,** with a Dove between them.
20. **THE FATHER** holding by the cross-beam, a cross with the figure of Christ upon it, and a dove proceeding downwards from the lips of the Father.

#### EMBLEMS OF THE PASSION AND CRUCIFIXION.

21. <b>TWO SWORDS</b> (of the Apostles).	21. <b>THE THIRTY PIECES OF SILVER.</b>
22. <b>THE EAR</b> (of Malchus).	22. <b>THE HAMMER AND PINCERS.</b>
23. <b>THE SWORD</b> (of Peter).	23. <b>THE LADDER.</b>
24. <b>THE PILLAR AND CORD.</b>	24. <b>THE LANTERN.</b>
25. <b>THE SCOURGE.</b>	25. <b>THE BOXES OF SPICE FOR EMBALMING.</b>
26. <b>THE CROWN OF THORNS.</b>	26. <b>THE SEAMLESS GARMENT.</b>
27. <b>THREE DICE.</b>	27. <b>THE PURSE.</b>
28. <b>THE SPEAR.</b>	28. <b>THE COCK.</b>
29. <b>THE SPONGE.</b>	29. <b>THE HEART WITH FIVE WOUNDS.</b>
30. <b>THE NAILS.</b>	
40. <b>THE HEART WITH THE HANDS AND FEET EACH PIERCED WITH A WOUND.</b>	

## GENERAL EMBLEMS.

41. THE CROSS.—The general emblem of Christianity. In particular, the sufferings of Christ. Christ himself. Sometimes shown with precious stones at the extremities, and at the intersection, typifying the five wounds of Christ. There are several forms of the cross: the Roman, or ordinary cross; the Greek cross, with four arms of equal length; St. Andrew's cross, like the letter X; St. Anthony's cross, like the letter T; the Labarum, or Cross of Constantine, being the Roman cross interlaced with the two initial letters of the Greek name of Christ; the Patriarchal cross, which is the Roman cross with two horizontal bars; the Maltese cross; and others.
42. THE LAMB.—See emblems of Christ above. Twelve lambs, with a thirteenth, larger, and bearing the cross, or with a nimbus, Christ and the twelve apostles.
43. The LION.—See emblems of Christ. The resurrection; so signifying because of an eastern tradition that the cub of the lion is born dead, and licked into life on the third day. Solitude, when shown in connection with St. Jerome or other hermits. Courage and fortitude, when shown at the feet of martyrs.
44. THE PELICAN.—Redemption. On account of the belief that this bird tears open its own breast to feed its young with its blood. Often surmounts the cross.
45. THE DRAGON.—Sin. Paganism. When shown conquered by St. George, or some other saint, the triumph of Christianity. Emitting flames from its mouth, the jaws of hell.
46. THE SERPENT.—Sin. Sometimes shown trampled under the foot of the Virgin; sometimes twined round the globe, to show its universal power; sometimes dead at the foot of the cross; sometimes with a chalice, signifying St. John the Evangelist.
47. THE HIND.—Religious aspiration (Psalm xlii.). Solitude and hermit life. The attribute of St. Eustace and other saints.
48. THE UNICORN.—Said to be able to evade all pursuers except a virgin of perfect purity; hence an emblem of the Virgin Mary.
49. THE PEACOCK.—The change from life to immortality.

50. THE DOVE.—See emblems of the Holy Spirit. When shown flying from the mouth of the dead, the Soul ; sometimes an emblem of purity.
51. THE OLIVE.—Peace.
52. THE PALM.—Martyrdom (Rev. vii. 9).
53. THE LILY.—Purity.
54. THE APPLE.—The Fall of Man.
55. A BURSTING POMEGRANATE.—A hopeful future.
56. THE LAMP, OR TAPER.—Piety.
57. FIRE, OR FLAMES.—Zeal. Martyrdom.
58. THE FLAMING HEART.—Fervent spiritual love.
59. THE CROWN.—Victory over sin and death. It may be a regal crown, or a mere chaplet or wreath. On female figures, usually on the head ; on figures of men, often held in the hand.
60. THE SWORD, THE AXE, THE CLUB, and other similar instruments are all emblems of martyrdom, and often shown in connection with martyrs to signify the manner of their death. Anvils, arrows, shears, pincers, cauldrons, wheels, poniards, &c., are among the instruments frequently shown.
61. THE SKULL, THE SCOURGE.—Penance.
62. THE SHELL.—Pilgrimage.
63. THE BANNER.—Victory.
64. THE CUP.—Faith. The Eucharist.
65. THE BOOK.—The Scriptures.
66. THE ARK, OR A SHIP.—The ship of souls. The boat of St. Peter, amid the waves, guided by Christ, shows his watchful care of the church.
67. THE ANCHOR.—Steadfast hope.
68. EARS OF CORN AND BUNCHES OF GRAPES. The Eucharist.
69. A VINEYARD WITH LABOREERS. Christian Work.
70. THE CANDLEABRA. Christ and the Church, with seven branches, the seven churches and the seven gifts of the spirit.
71. LITTLE NAKED BODIES. The Souls of Men.
72. THE BURNING BUSH. Moses.
73. THE SERPENT BENEATH THE FEET OF THE VIRGIN. "She shall bruise thy head."

74. THE GLOBE. Entwined by the Serpent, and beneath the Virgin. The triumph of the Virgin over a sinful world.

75. THE POMEGRANATE. Hope.

76. FRUITS. The Fruits of the Spirit, "Joy, Peace, Love."

77. THE GREEK CROSS, with a Scroll or Book on each arm. The Four Evangelists.

78. THE FOUR RIVERS. The four Evangelists. Sometimes represented with a symbol of the Savior on an eminence, and the four rivers flowing from beneath, fertilizing the whole Earth.

79. THE FOUR FIERY CREATURES. The four Evangelists. (Ezek, 1, 5.) The four Archangels. The four greater prophets.

80. THE FOUR BEASTS OF THE APOCALYPSE. These were the usual distinctive symbols of the four Evangelists.

THE CHERUB—The most like a human being—St. Matthew—Because he speaks more of the human than the Divine nature of Christ.

THE WINGED LION. St. Mark—Because :

1. He begins his gospel with the mission of John the Baptist, "The voice of one crying in the Wilderness."

2. He makes the royal dignity of Christ so prominent; and the Lion is the King of Beasts.

3. Because he is the special historian of the Resurrection, of which the Lion is the Emblem.

THE WINGED BULLOCK—St. Luke—Because he sets forth the Priesthood of Christ, and the Bullock is emblematic of sacrifice.

THE EAGLE—St. John—Because of his lofty flights of inspiration. The four Beasts were also held to signify the Incarnation, Passion, Resurrection, and Ascension of Christ; and again the four-fold character of Christ as Man, King, High Priest and God.

81. THE TETRAMORPH. From a Greek word meaning "four figures." A union of the last named emblems of the four Evangelists in one figure standing on fiery winged wheels covered with eyes. The emblem of Terrific Velocity.

82. THE FISH. (See emblems of Christ above.) Water. Baptism. The vocation of the Christian Apostle, or "Fisher of Men." Christians generally. (Matt. iv. 19; John, xxi.)

83. THE KEYS. St. Peter. Often with the Sword.
84. ST. ANDREW'S CROSS. (X) St. Andrew.
85. THE PILGRIM STAFF. St. James the Greater.
86. THE CHALICE WITH THE SERPENT. St. John the Apostle, as distinguished from the same person as an Evangelist, when his Emblem is the Eagle.
87. THE BUILDER'S RULE. St. Thomas.
88. THE CLUB. St. James the Less.
89. A SMALL CROSS ON A STAFF, SUREMOUNTED BY A CROSS. St. Philip.
90. THE KNIFE. St. Bartholomew.
91. THE PURSE. St. Matthew the Apostle.
92. THE SAW. St. Simon.
93. THE LANCE. St. Thaddeus.
94. THE LANCE. St. Matthias.
95. THE CRUCIFIX. Penance. Faith. Held in the hand, a Preacher.

EMBLEMS OF ANGELS.

96. SERAPHIM. Represented as covered with eyes.
97. CHERUBIM. Represented with six wings, and usually standing on wheels.
98. THRONES. Represented as carrying a tower to support the Throne of God.
99. DOMINATIONS. Represented with a sword, triple crown and sceptre, or an orb and cross.
100. VIRTUES. Represented in complete armor, as carrying a battle axe and Pennon; or a crown and censer.
101. POWERS. Represented with a baton, or in the act of scourging evil spirits.
102. The Archangel Michael. Represented with the sword and scales.
103. The Archangel Gabriel. Represented with the Lily.
104. The Archangel Raphael. Represented with the staff and gourd of the Pilgrims.
105. The Archangel Uriel. Represented with the roll and book.

SYMBOLISM OF COLORS.

106. WHITE. Purity.
107. RED. Divine Love. In opposite sense, blood, war, Red and black combined symbolized evil spirits.
108. BLUE. Heaven. Truth. Constancy.

109. GREEN. Hope. Victory.
110. YELLOW. Goodness of God. Fruitfulness.
111. VIOLET OR AMETHYST. Suffering. Love. Truth.
112. GREY. Penance.
113. BLACK WITH WHITE. Humility. Mourning.

The Mitre, Crozier, Triple Mitre, and other insignia of ecclesiastical authority are emblems of the offices to which they belong.



## On the Constructive Use of Wood.

BY P. B. WIGHT.

THE use of wood for constructive purposes, dates back to pre-historic times. It was employed for the most primitive structures, when the only art of building known consisted of the tying together of branches of trees and covering them with brush. Then wood was actually used in its growing state, and the idea of "manufacturing" lumber was unknown. The remarkable properties of wood in its resistance to compression, together with its toughness and the ease with which it is worked, are such as to have adapted it to more varied uses than any other material known to man.

While treating of the constructive uses of wood, we refer to its use in best accordance with its own structural character, especially with reference to its employment in the finishing of churches and buildings generally, and its adaptation to the construction of furniture. We say the *construction of furniture*, rather than the manufacture of it, because we maintain that the construction is of more importance than any other process in its manufacture. Lightness, combined with strength, are the essential qualities of all *movable* furniture, while the constructive use of wood, with a view to developing the best properties of the material in the simplest manner, is no less essential in those articles which are more permanent in their nature.

The study of architecture, as practiced in all ages known to us, reveals the whole history of the use of wood, or at any rate all that is known of it. We know from paintings, that the Egyptians used straight wood in their furniture. The Greeks and Romans, as shown on their medals, used straight grained, well constructed furniture. The Chinese in ancient and modern times, have been famous for their admirable woodwork, in which they have combined lightness and strength to a remarkable degree. The earliest actual remains of any extensive use of wood for interior work, are found in the buildings of the Middle Ages, from the 12th to the 15th century, and it is in this period that we find the highest development of the art of wood working, and its most extensive use. For two centuries later, and in some localities down to the end of the 18th, wood continued to be used constructively, espe-

cially for furniture making; and much of the work of this latter period, which has been preserved, is now highly prized by connoisseurs, and eagerly sought for by Museums of Art. To the preservation of these and the recent extensive study of mediæval art may be ascribed the recent revival in furniture making. The French artists of the Renaissance, however, did everything that was possible to debase the use of wood and make it subservient to whim and caprice, making it in many cases only the skeleton to be arrayed in ornament executed in a baser material, overloaded with paint, gilding and inappropriate adornments of metal, shells, and even stone. They distorted straight grained wood, and gave it all sorts of twists and curves which made it resemble bent wood. In doing this they had to resort to tricks and ingenious devices to make it stand ordinary wear. Even when foreign materials were not employed for ornament, they overloaded the wood with carving, with total indifference to the use to which it was to be put. From the French Revolution down to the present time these styles have had their followers, and cheap imitations of French furniture have been the staple of most furniture factories and dealers. The revival which has set in during the past twenty years, especially in England and America, is one founded on common sense. It recognizes the distinctive properties of wood; that its grain runs one way, and that in that direction is its line of strength; that it is liable to shrink greatly, if used in wide pieces, notwithstanding the efforts that are made to prevent this natural occurrence; that it may check or warp, unless cut from the tree in a particular direction; and, mainly, that it should only be joined together by the mechanical methods of securing wood to wood without other artificial adjuncts, or in other words that the mortise and tenon are the main reliance in joining two pieces, and that glue is at most but subsidiary. It is the observance of these principles which is the distinctive feature in constructive woodwork. The work which purports to be of the revival is not all faithful work, and it is important that the distinctive features of good work should be known to the general public, so that they can judge between the good and the bad. The revival has its true and its false prophets. The latter, unable to understand its meaning, and indifferent to the inculcation of true principles of art applied to mechanical work, consider it to be a *fashionable* style, and push it along as such. But it is only a fashion in so far as they can put such work on the market with imitation tenon and wedge work, panels which are not framed, glue joints for mortise and tenon joints, and the like. A revival such as that now in progress,

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urged on by the body of intelligent architects and put in practical operation by a few conscientious manufacturers, is not for a day, but is permanent. It is a style always capable of higher development, and it is these improvements, in place of shifting fashions as of old, will redound to the benefit of any faithful manufacturer no less than the advancement of art, because it is founded on the constructive use of wood and its adornment in accordance with its capability to display genuine artistic work.

From the use of growing trees to the manufacture of modern wood work there is a wide range between the degrees of excellence in workmanship growing out of the vast improvements in processes and especially in the preparation of materials. The wood-work of the Middle Ages was without fault, but it was the result of an amount of actual labor from which we would now recoil. The lumber was well seasoned, but it was seasoned by time alone. Moreover it was all hand work. The ingenuity of man in modern times has devised methods for curing and preparing the material in much less time than was formerly employed; and, though the old methods should not be set at naught, the new methods have this advantage, that they economize the amount of capital required in carrying on work on an extensive scale to meet the enormous and rapid demands of our time. Now, also, in the sawing, dressing, moulding, mortising, and sand-papering of lumber, machinery does all the work. The lathe was almost the only machine used by the ancients. Now improved machinery enables us to do the most elaborate lathe-work at comparatively small cost. As long as machine work does not invade the realm of the carver, the artistic value of machine-made wood work is not deteriorated, and its cost is greatly reduced. There are really only two machines in general use which are at war with art, and those are the scroll-saw and the shaper, both of which have led to great abuses in design; but they are but little used in the finer sorts of work.

The main stay of constructive wood work is the mortise and tenon. A piece of wood work which can be put together without glue, nails or screws, and serves its purpose, is an ideal work of construction. But this is not always possible. Another principle of construction is that every piece of wood should be so placed that it can swell or shrink without injuring itself or displacing any other piece. This is maintained in an ordinary paneled door, provided no mouldings are inserted. Still another principle is that mitre joints should be avoided, whether for moulded work or not, for the reason that shrinkage causes all mitres to open. No piece of wood

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should be used unless the straight grain of the wood can be seen through its full length in one place. Inserted mouldings should be avoided, as far as possible, and all mouldings for panel work should be worked on the styles and rails. It is a general principle, observed in the best Mediæval joinery, that all mouldings on rails (which are horizontal) should butt against the stiles, and that stiles should be either plain or should have mouldings stopped before reaching the joints with the rails. In practice all rail mouldings may be worked the whole length of the stuff used, and if muntons (which are the middle stiles) are used, the moulding may be cut away to the square wood before the mortise is cut which is to receive the tenon of the munton. Thus the mouldings will butt against the square sides of the munton. All the parts for a door thus made can now be got out by machinery, and the door will be fully constructive in every sense of the word. There is no obstacle to this in the way of cost. The dovetail is a constructive device, and the dowel is admissible in places as a substitute for the mortise and tenon. Tongue and grooving is a legitimate device, both for ends and sides of boards. Beveling the edges of the pieces thus joined is better than beading. The best way to construct large panels is to make them of narrow strips tongue and grooved, and beveled at the joining edges. Such panels will never "draw." The shrinkage will be divided between all the joints. Solid table tops should never be fastened with glue or screws, but should be secured with buttons fastened to the under side of the top, which travel in grooves cut in the framework to allow for expansion and shrinkage. These are but a few of the principles to be observed in doing the best wood work.

In all kinds of lumber the heart should be rejected. All boards cut on a radius from the center to the periphery of a tree will remain true, while all others have a tendency to warp or check. The first are called "quarter-sawed." It is a peculiarity of oak that the best grain is found in quarter sawed boards. It is only in these that the "silver grain" is seen. This consists of a ribbon of very hard substance which grows out from the center of the tree. It is for this reason that oak is the most enduring wood; it has a grain two ways. All woods check in the direction of a radius from the center. Quarter-sawed oak cannot check.

## EXPLANATORY.

**W**E make our Church Furniture in different styles, as follows:

All exposed surfaces, Black Walnut.

Walnut, with Panels and Ornaments in light woods. (Ash, Oak, or Butternut.)

Ash, with Walnut Panels and Ornaments.

Butternut, with Black Walnut Panels.

Pine, with Walnut Panels and Ornaments.

Whitewood, or Poplar and Basswood, varnished.

All designs are executed in any woods, which should be specified in the order. For work in woods other than those specified, special prices will be given on application.

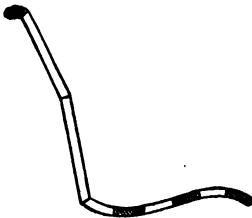
The designs shown, though mostly leaning to the Gothic in their ornamentation, are generally such as will harmonize with any order of architecture.

Designs for the *entire furnishing* of churches will be made at a reasonable charge, and the price paid allowed upon settlement of bill, if we receive an order for the work. Such designs, made to harmonize with the peculiar architecture of particular churches, may, of course, be more pronounced and striking than designs intended to be appropriate to *any* church. We do not make designs, except with a view of executing them ourselves. Requests for designs for furnishing should be accompanied with tracings of the plans of the church.

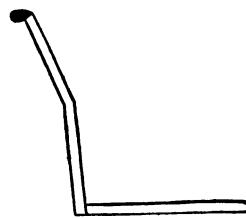
When designs are furnished by the architects, our estimates for the work will be promptly given when requested.

# PEWS.

PARTICULAR NOTICE.—All orders for Church Pews, or requests for special estimates, should be accompanied by an exact diagram, drawn to a scale, and showing the position of every Pew.



Slat Seat.



For Cushions.

We make all our Pews in three styles, one with Curved Slat Seats, not designed for Cushions, and two with Flat Seats, designed for Cushions, as follows:

Pew No. 1.—Curved Slat Seat, and Curved Back. All hard wood. No cushions needed.

Pew No. 2.—Flat Soft Wood Seat. Curved Hard Wood Back. For Cushions.

Pew No. 3.—Flat Seat. Curved Back. All Soft Wood. For Cushions.

All Pews have Walnut Scroll on the back.

The above cuts of sections of the two seats show the exact shapes of the seat and back. Great attention has been given to securing the most comfortable shape possible, and we think the sittings will be found perfect in this respect. The cheapest pews are as comfortable as the most expensive. The Pews are sold at a fixed price per running foot, including all necessary middle supports, but do not include ends or middle divisions, which are sold separately, and may be made to any design.

When shipped, all exposed surfaces are thoroughly finished in oil or shellac, or, if ordered, in varnish.

All lumber used is thoroughly kiln-dried.

Curved Slat Seats are cheaper than Cushioned Seats, and by many are considered more comfortable. Upholstered Pews frequently need repairs, and accumulate dust, which fills the church at the time of service, rendering the atmosphere both unpleasant and unhealthy.

## PEW ENDS AND DIVISIONS.

**PARTICULAR NOTICE.**—All orders for Church Pews, or requests for special estimates, should be accompanied by an exact diagram, drawn to a scale, and showing the position of every Pew.

**D**ESIGNS, new, either in shape or ornamentation, will be made at same prices, if they involve no more work.

Subdivisions of Pews are made by means of simple arm-rests, fitted to the shape of the seat, but not connected with the support below the seat; or by complete divisions, gained on both sides to receive the seat, and in outline and general appearance, to correspond with the ends, but plainer below the seat; or by a uniform, continuous partition, running the whole length of the block of pews. Of these methods,

The Arm-Rest is the cheapest.

The Middle Division costs a little more.

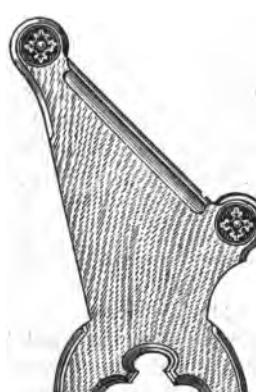
The Continuous Partition, by reason of the increased labor of setting up, is the most expensive of all, and is now generally discarded on account of the greater convenience of pews admitting a passage from one aisle to another.

Pew Ends are shipped thoroughly finished in oil or shellac, or, if ordered, in varnish.

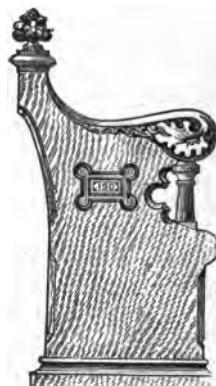
All Lumber used is thoroughly kiln-dried.



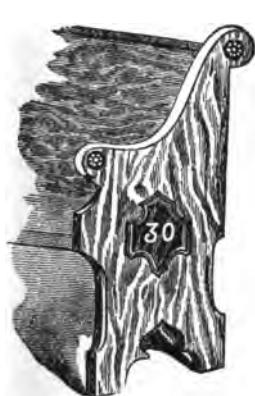
No. 600.



No. 601.



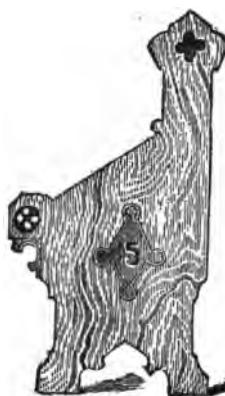
No. 602.



No. 603



No. 604.



No. 605.



No. 606.



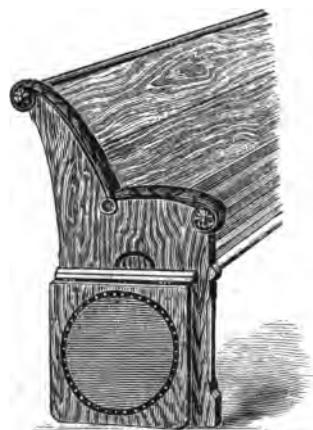
No. 607.



No. 608.



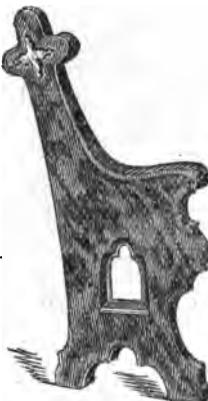
No. 609.



No. 650.—Aisle Seat. Upholstered in Leather. Folds, when not in use, as shown in cut, without perceptibly diminishing the width of the aisle.  
The end of the left hand cut is Pew End No. 610.



No. 611.



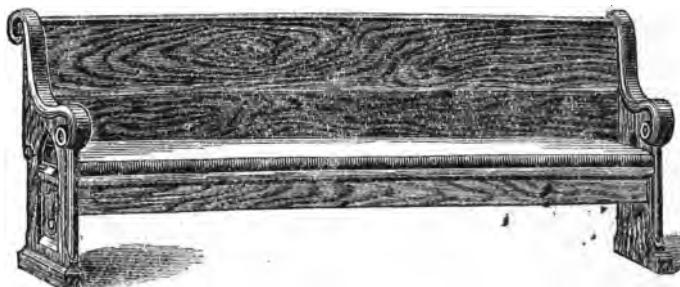
No. 612.



No. 613.



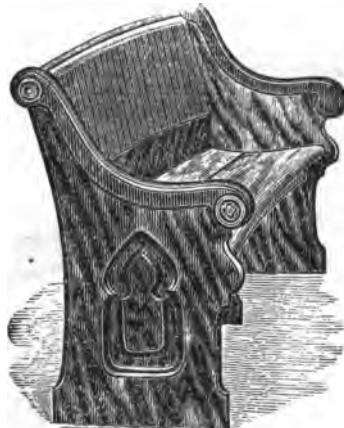
No. 615.



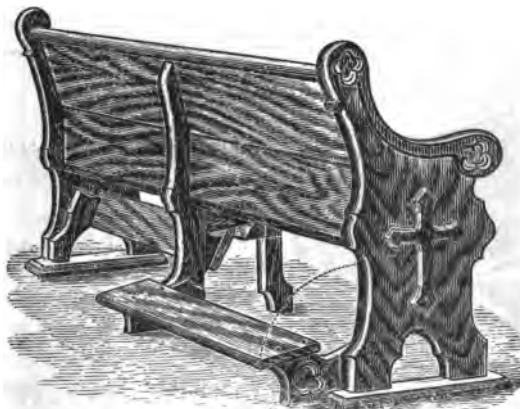
This cut shows the general appearance of our Pews, as usually made. It is from a photograph of a pew made by us for the First Baptist Church of Chicago. The Pew End is No. 616.



A "Segment Pew;" that is, a pew made on a segment of a large circle. The Pew End is No. 617. For Cushions, see the article "Upholstery."



End view of Segment Pew. The End is Pew End No. 617.



View of Pew with Kneeling Stools (No. 681) to raise and lower. The Kneeling Stools are added at a price *additional* to the price of the Pew.

## SUNDAY SCHOOL AND HALL SETTEES.

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### *Scroll Pattern Settee.*

Floor space—8 ft. x 28 in. Any length made to order.

No. 160. Whitewood.

No. 161. Same. Hinged leaf attached, forming a narrow desk for students who take notes.



### *Rustic Folding Seat, Stationary Back.*

Floor space—8 ft x 28 in.

No. 163. Curved Seat. Paneled Back. Walnut. Ash Panel. Alternate Ash and Walnut Slats in Seat. Usually made with panel extending through to ends, instead of as in cut. So made, unless otherwise ordered.

No. 164. Same. Plain Solid Back. All ash.

**Rustic Stationary Seat. (Reversible Back.)**

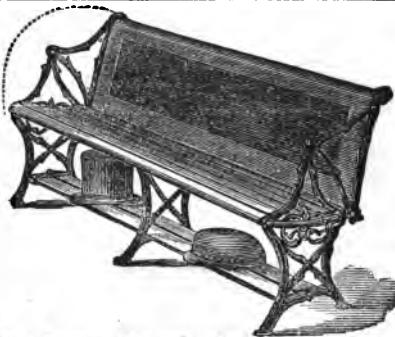
Floor space—8 ft. x 28 in.

No. 165. Curved Seat. Paneled Back. Walnut. Ash Panel. Alternate Ash and Walnut Slats in seat. Usually made with panel extending through to ends, instead of as in cut. So made, unless otherwise ordered.

No. 166. Same. Plain Back. Ash. This seat is similar in style to No. 163 and 164, and is designed to accompany it.

In Lecture rooms, Church and Sabbath School Rooms, this seat, alternating with the above, presents a neat and uniform appearance, and facilitates the immediate facing of classes by means of the Reversing back, which swings as indicated by dotted lines.

No 163 and 165 are usually made with solid paneled backs, but may be made with open panel back, as shown in cut of No 167, if desired.



**Removable Hall and Assembly Seat.**

Floor space—8 ft x 28 in.



No. 167. Open or Solid paneled back. Ash. Walnut Panels and Scroll.

No. 168. Same. All Ash. No Panel.

Curved Folding Seat, with alternate Ash and Walnut Slats.

Orders should state whether Open Panel is desired. Solid Panel will be sent, unless otherwise ordered.

*New Idea Sabbath School Seats.*

No. 172. Wood Ends. Alternate Walnut and Ash Slats.  
Floor space—8ft. by 38 in.



for free movement and with very little noise. The mechanism is simple and safe, and impossible to get out of order. The curve of this seat is precisely that of our Railroad and Church Settees, and fits the form.

*New Reversible Pew and Sunday School Seat.*

No. 173. Stationary Back.

No. 174. Reversible Back.

*ALL ASH.*

This Pew has a curved back, and a curved slat seat. Designed for Churches which have but one room for all religious services. A comfortable pew, and by reversing the front one the Sabbath School classes are accommodated.

The Stationary Back and Seat can be adapted to any pew end, however elaborate. Pew Ends 600, 602 and 609, can be applied to it in the reversible form. No 609 is specially adapted to it, and is not expensive.

*Folding-Leaf Desk Attachment.*

No. 175. Cut shows the *Folding-Leaf Desk Attachment*, as attached to No. 169.

This Folding-Leaf Desk has a book-box, which is closed, when desired, by the falling leaf. This is a very convenient Lecture Room Desk, and may be attached to our Nos. 156, 163, 164, 167, 168, 180 and 181.

Specially desirable for use in Theological Seminaries, or other institutions where students desire to take notes.

*Slat Back Removable Assembly Seats.*

For Public Halls or Lecture Rooms, which are cleared for festivals, fairs, etc. Two seats can be packed into the space of one.

The castings are of extra strength; and the seats stand firmly, without fastening to the floor.

No. 180. Curved Back and Seat. Folding Seat. Alternate Ash and Walnut Slats.

No. 181. Same. All Ash.

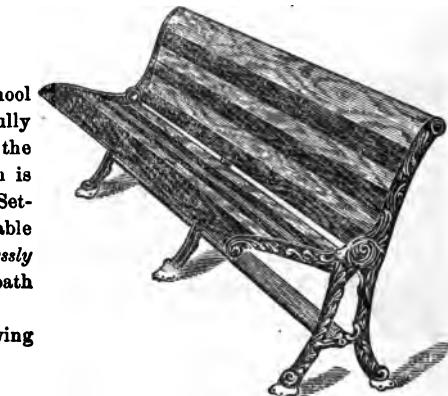


*Andrews' Reversible Settee.*

This entirely new Sabbath School Settee will be found to meet, more fully than any thing hitherto devised, the wants of those desiring a seat which is at once a substantial and handsome Settee for the assembly room, and capable of being quickly, easily and *noiselessly* reversed, to accommodate the Sabbath school classes.

This seat possesses the following decided advantages:

1. It is strong and durable.
2. It is handsome and comfortable.



No. 183. Portable Settee.

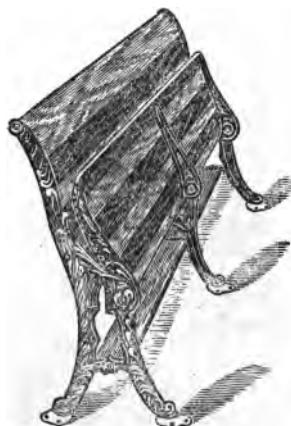
3. It stands on strips, and need not be fastened to the floor, thus saving the carpet.

4. It is reversed easily and noiselessly.

5. If it is desired to clear the room, it packs into less space than any other settee.

6. It is light, and easily handled.

7. It is cheap.



No. 183. Arranged for sweeping, or for entering the pew.



No. 183. Arranged for packing away to clear the room.

*New Flexible Jointed Sunday School Settee.*

No. 184.

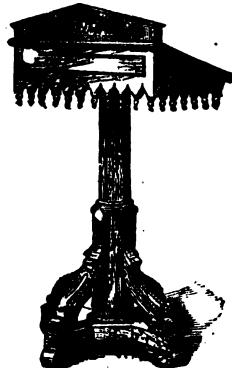
This is a strong, durable and beautiful settee, made in sections which are permanently hinged together by a flexible arrangement, combining strength with convenience. The construction is such that the settee, when wanted for Sunday school class purposes, may be brought into the form of a semicircle or any other degree of curve which may be desired. When wanted for the use of a congregation to be addressed from the platform, as in prayer meeting or lecture, it can be straight, or, if preferred, slightly curved, as pews often are in churches. The change can be effected in a moment, without noise or trouble. So easy is it to alter the settee from one form to another, that in Sunday school, after the hour for teaching has expired, and when it is desired to give a review or addresses from the platform, and therefore, to have the whole school facing the speaker, every class form in the largest school can, on signal from the superintendent, be changed from curved to straight in thirty seconds, without the least noise or confusion. The settee is strongly framed and substantially built, so as to keep the position in which it is placed. At the same time it is pronounced by competent judges to exceed all others in beauty as a piece of furniture.

This will be found to be the most economical seat of any, both in respect to its cost and to the number of persons it will accommodate for its length. Whether curved or straight, it forms a continuous seat, without breaks or inequalities, affording every sitter on it equal comfort.

## PULPITS, LECTURNS AND PRIEDIEUX.

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WE make Pulpits and Lecturns in all woods. Hard woods are generally preferred, although pine, finished in oil, with walnut mouldings and ornaments, makes a handsome pulpit. In ordering, always state the wood desired. Pulpits and Lecturns are shipped completely finished in the natural colors of the woods used.



No. 480.

May be raised or lowered.



No. 481.



No. 482.



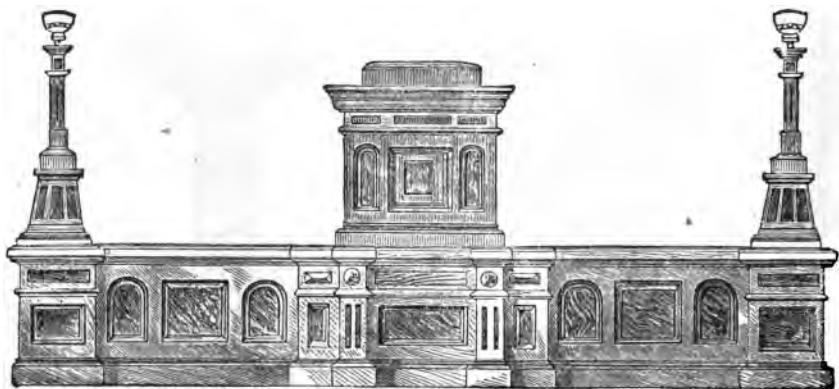
No. 483.



No. 484.



No. 485.



Design of Pulpit, Side Lamps and Platform Front, made for M. E. Church in Huntsville, Ala.

The Pulpit is No 488.

The Lamp Stands are No. 675.



No. 486.



No. 487.



No. 489.  
Top to raise and lower.



No. 491.



No. 492.



No. 494.



No. 494.  
Pulpit.



No. 800.



No. 801.



No. 490. Priedieu.



No. 850. Priedieu.



No. 852. Priedieu.



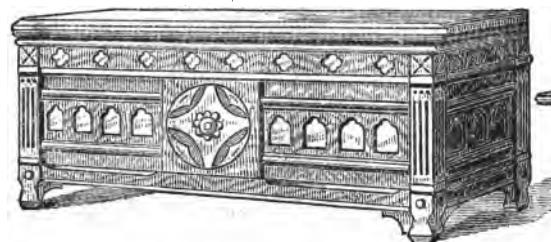
No. 860. Pulpit.



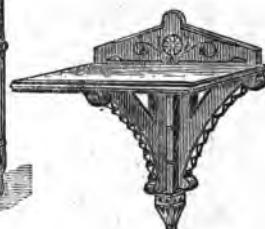
No. 791. Flower Stand.

## ALTARS, COMMUNION & CREDENCE TABLES.

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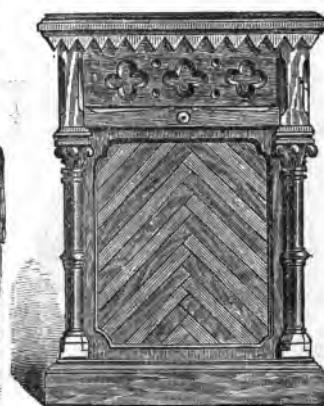
No. 900. Altar.



No. 493½. Credence Shelf.



No. 901. Altar with Super Altar.  
Shown covered with an Altar Cloth.  
May be had without Super Altar, or  
with elaborate Reredos in addition.



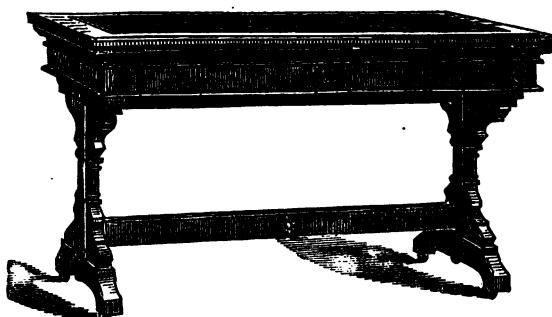
No. 493. Credence Table.  
Front view—ends of same pattern.



No. 495. Communion Table.



No. 496. Communion Table.



No. 497. Communion Table.

## PULPIT CHAIRS AND SOFAS.

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MADE in all woods, but mostly of Walnut. They are thoroughly upholstered, and covered in any material desired. Plush (Utrecht velvet) is most economical, and the prices given include covering of that material. Terry is a little cheaper. Hair cloth is not now much used. Chairs and Sofas are shipped completely finished. New designs made and executed to order. The color of the covering should be specified in the order.



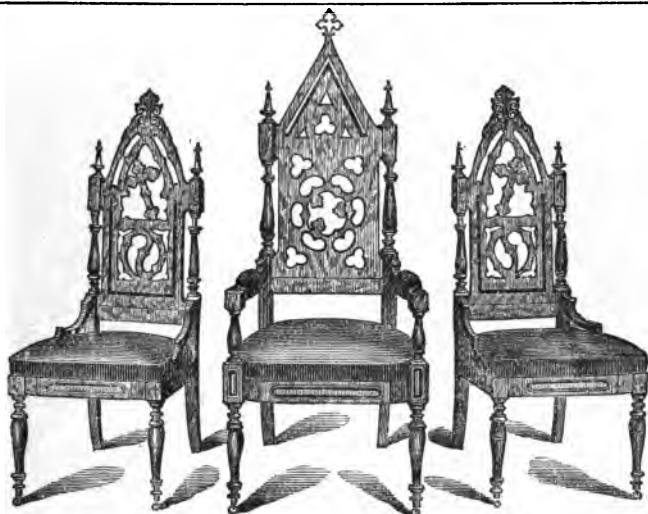
No. 526.



No. 525.



No. 521.



No. 529 $\frac{1}{2}$ .

No. 529.

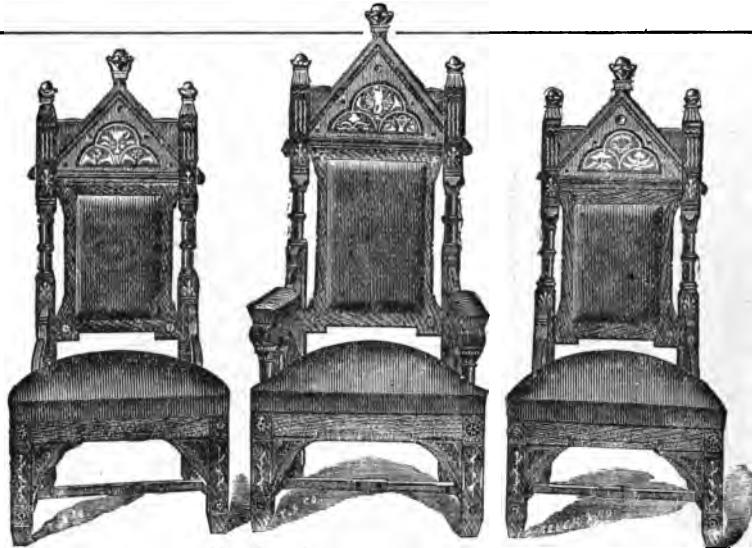
No. 529 $\frac{1}{2}$ .



No. 530 $\frac{1}{2}$ .

No. 530.

No. 530 $\frac{1}{2}$ .



No. 532 1/2.

No. 532. Mediæval Church Chairs.

No. 532 1/2.



No. 533 1/2.

No. 533.

No. 533 1/2.

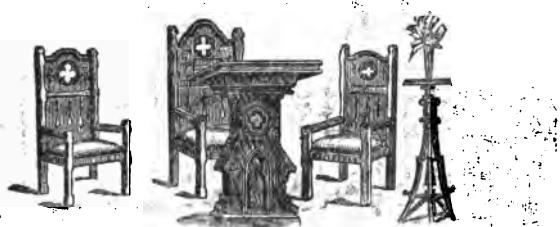


No. 559.

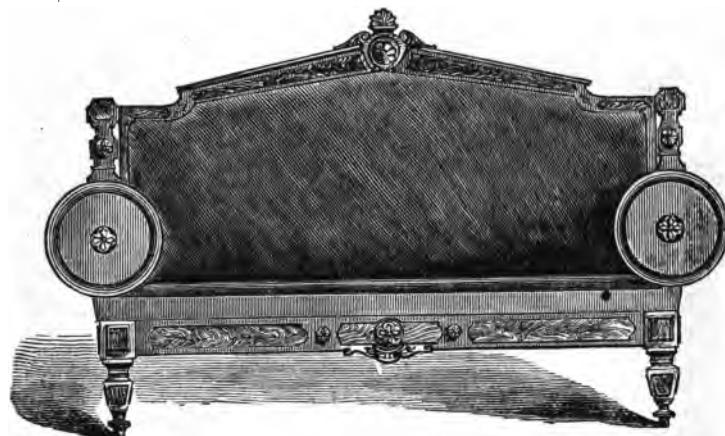


No. 560.

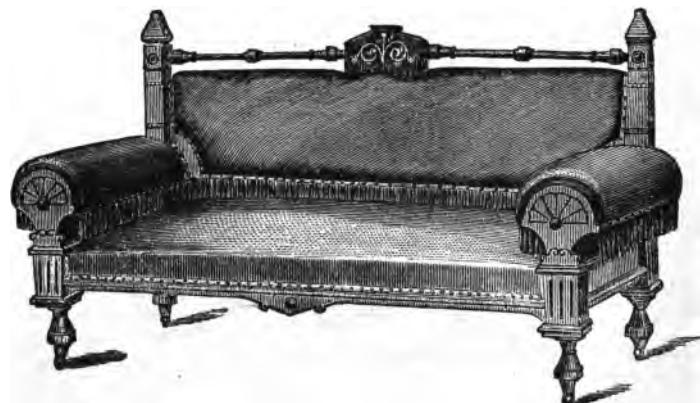
These Chairs, with Sofa No. 10, upholstered in leather, as shown in the cut, are taken from our catalogue of Office and Library Furniture, and form part of an exceedingly elegant, and not very expensive, gothic library set. With the proper change in upholstery to render them suitable for church use, they become beautiful and thoroughly appropriate articles of Pulpit Furniture.



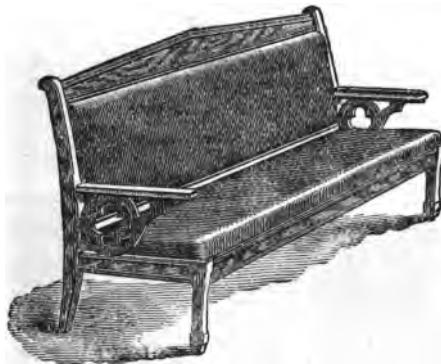
This set is often selected by church committees. The Pulpit is No. 485, and the Chairs Nos. 533 and 533½. The Flower Stand is No. 790.



No. 6. Pulpit Sofa.



No. 10. Pulpit Sofa.



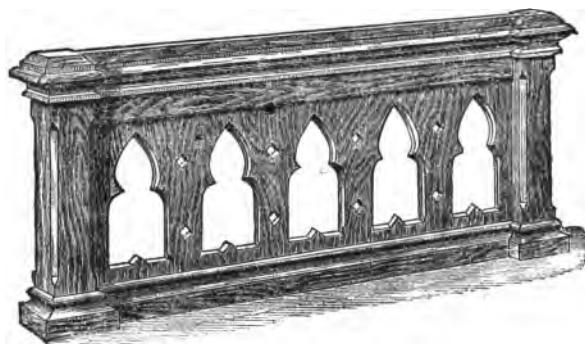
No. 8. Pulpit Sofa. Chair No. 9, same style.



No. 50. Chancel Chair, or Stall. Made singly, or in sets, to order.

## MISCELLANEOUS FURNITURE.

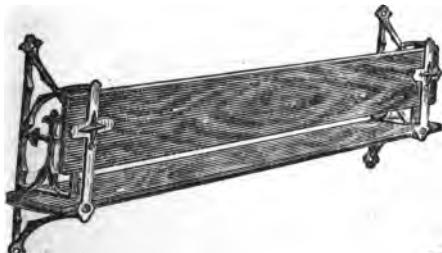
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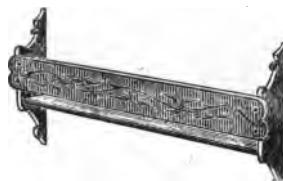
No. 700. Altar Rail.



No. 701. Platform Screen. To be placed in front of the Pulpit, or the Choir.



No. 190. Book Rack. Metal Ends.



No. 191. Book Rack. All wood.

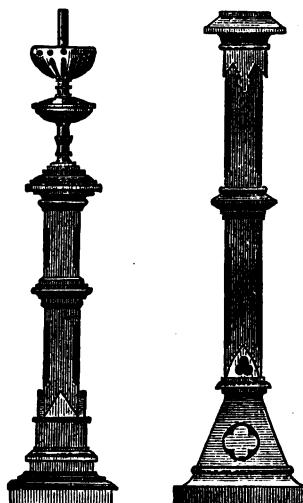


No. 195. Contribution Plate.



No. 196. Contribution Plate.

No. 197. Same. Without inscription.



No. 678.

Lamp Stands.

No. 677.

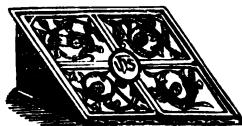


No. 680. Kneeling Stool.

For No. 681, see page 57.



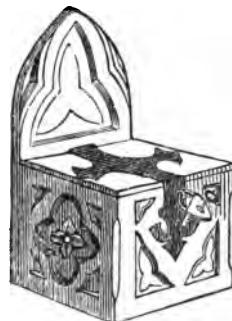
No. 685. Movable Incline.



No. 686. Movable Incline.  
To be placed on flat pulpit tops.



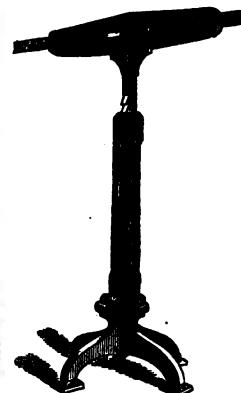
No. 690. Pastor's or Alms Box.



No. 691. Pastor's or Alms Box.



No. 695. Font. With Porcelain Basin and Waste Pipe.



Movable Map Supporter for Sunday Schools, \$10.



No. 198. Collection Bag.









## STAINED WINDOWS.

NOTE.—Much information, valuable in this connection, will be found in our article on Taste in Church Furnishing. See, especially, those portions relating to Gothic Architecture, and Symbolism, pages 23 to 45. Our sheet of designs, colored, will be sent on application.

THE great increase in the demand for Stained Windows has determined us to add this department to our establishment. We believe the demand would be still greater if it were understood that they are very little, if any, more expensive than ordinary windows. A very neat stained window can be obtained for from 50 to 75 cents per square foot, and as it is set in a box which may form part of the window frame, there is no additional cost for sash, weights, blinds, or fastenings. Repairs are much less than in ordinary windows, the panes being so small that they are rarely broken, and, if broken, are easily replaced, by raising the lead with a knife, inserting the new glass and flattening the lead again.

Stained glass diminishes the *power* of light very little, thoroughly subdues the glare of the sun, and saves the trouble and expense of blinds or shades, and the darkening of the room which they occasion when closed.

The great beauty which stained glass gives to the interior of a church, the soft, rich light which streams through it; the ease with which it may be ornamented with emblems and allegorical pictures; its durability, strength and cheapness, render it of the highest value in ecclesiastical architecture.

When designs have been already procured, they should be forwarded to us, with exact dimensions and number of windows, on which our estimates for the work will be promptly returned.

If we are desired to furnish designs, the request for them should specify size of church, number of windows, and their exact size and shape, drawn in full size; whether all windows are to be alike, or, if not, how many different patterns are desired, and such other information as the following may suggest:

All purchasers should know something of the different varieties of colored glass. These are :

1. Enamelled glass, in which the color is spread, in a coat, upon the surface, and fused in a furnace.

2. Pot Metal glass, in which the coloring matter is mingled with the glass while in a melted state, so as to color the whole.

Both the above varieties have smooth surfaces, and are transparent like ordinary glass, except so far as obscured by the color.

3. Cathedral glass. This is thick, heavy glass, with a rough, furrowed surface, made in imitation of the glass of the Middle Ages, when the improved modern processes of manufacture were unknown. This glass is hardly transparent enough to permit objects to be distinguished through it, but the quality of the light transmitted is, for church uses, vastly superior to that passed through the modern glass.

All Cathedral glass is pot metal, except red, or *ruby*.

The ordinary Enamelled glass may be had in all colors, and the Pot Metal in all colors except red. The coloring matter of the red is so intense that if used in Pot Metal, the glass, if of ordinary thickness, would appear opaque.

The Cathedral glass is much more costly than the Pot Metal or Enamelled.

All subordinate outlines and shadows are executed in brown, the pigment being applied to the surface, and "flashed" in, in the furnace.

The ornamentation of the windows is usually either

1. Conventional Foliage, that is, stiff forms, intended by the rude artists of the Middle Ages to represent flowers, stalks and leaves, and now used in imitation of their work.

2. Imitations of the real forms of leaves, flowers and plants. This was also Mediaeval, and Gothic.

3. Geometrical Figures, imitation of flames ("Flamboyant").

4. Emblems. See page 88.

5. Inscriptions.

6. Pictures of Saints, Martyrs, Scenes from Christian History, etc.

The outlines of the ornamentation may be formed either by the mullions, the leads, by lines of color traced on the glass, or by a combination of all these means.

The "Head" of the window includes all above the spring of the arch. It is usually, but not always, ornamented with a rosette or an emblem.

The "Border" is a narrow strip running round the whole window, colored dif-

ferently from the rest of the glass. It may be plain glass, or ornamented with vines or emblems in various colors.

The "Quarries" are the diamond shaped panes forming the main part of the window.

When the Border is much ornamented, it is usual to insert a plain strip or second border between it and the quarries.

The quarries are usually ornamented with some little leaf or other device.

One or more large rosettes or emblems may be inserted in the Quarries, beside the one in the Head, which should be ornamented first, and inscriptions and full sized figures may be added as desired.

Much of the effect of stained windows depends upon the proper selection and distribution of colors. This, however, is governed by fixed principles easily understood, and which it is inexcusable to violate, but which sometimes *are* violated.

Stained windows, then, may be either

1st. Plain diamond quarries, and plain border.

2d. Ornamental diamond quarries, and plain border.

3d. Ornamental diamond quarries, and ornamental border.

4th. Ornamental diamond quarries, ornamental border, rosette or emblem in head.

5th. Ornamental diamond quarries, ornamental border, rosette, or emblem in head, plain strip between quarries and border.

6th. Like the last, with the addition of rosettes or emblems among the quarries.

7th. Figures, traceries, memorial, or other inscriptions may be added at pleasure, and the glass may be cut in any geometrical figure, instead of the diamond quarries.

While these general divisions may be made, such differences may exist in each division, in respect to elaboration of ornament, and number of colors required, as to render it impossible to give prices without a special estimate. We would ask those requesting designs to give *about* the limit of expense they wish to incur, when we will make the design to include all we can afford to do for the money.

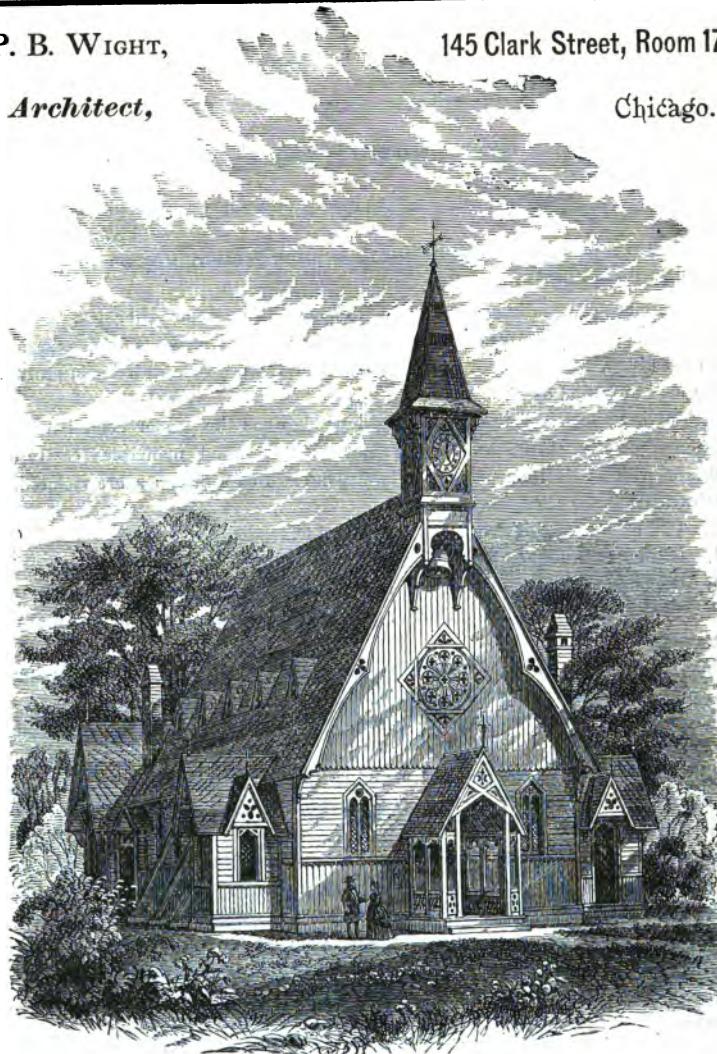
Ground glass, with cut ornaments, costs about the same, but is not considered so desirable.

P. B. WIGHT,

*Architect,*

145 Clark Street, Room 17.

Chicago.



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CHURCH ARCHITECTURE  
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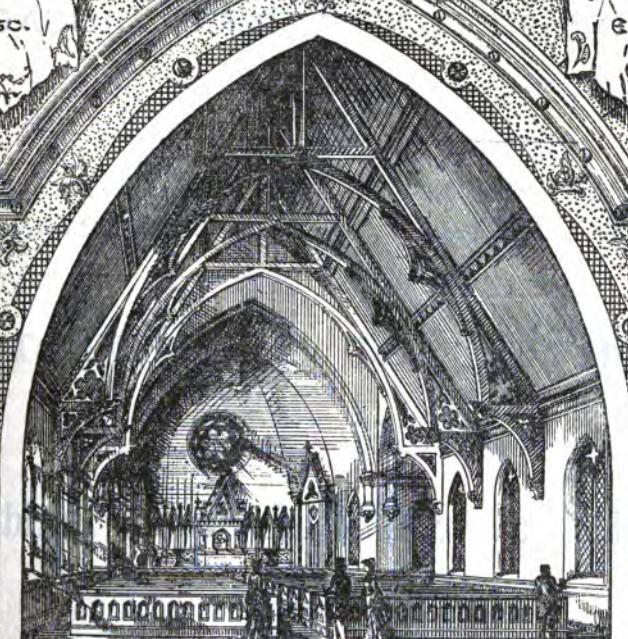
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*Professor of Architecture and Design at the University of Michigan.*

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## Church Decoration in Fresco.

THE term "Fresco," originally designated the art of decorating walls and ceilings with pictures, formed by colors incorporated with the moist plaster, which was applied to the wall as the design progressed. The celebrated cathedrals of the Old World are rich in pictures worked out by this slow and expensive process.

This method has long fallen into disuse, but the name remains, applied to pictures painted upon the surface of the finished walls. There are two distinct classes of this modern work :

1. "Chiaroscuro," or "Light and Shade," in which two or three shades of grey pigment are employed to represent to the eye the effects of light and shade, usually—as it has been practiced—in depicting sham mouldings, cornices, pillars, capitals and bases, often upon walls whose outward covering everybody knows to be pine clapboards!

2. "Polychrome," or "Many Colors," in which appropriate designs are drawn, either in "perspective"—that is, so as to appear standing out from the walls—or "flat"—that is, so as to appear as if all out of sight, within the wall, except one surface—and painted in their proper colors.

Chiaroscuro has been sometimes employed by great masters, under suitable conditions, to produce masterly effects; but, as usually seen in American churches, it has only been evidence of the lack of art, which, in a new country, is the certain result of a lack of wealth and culture. Such work as we have described, however, has been so general in America, that many persons have come to surround it with sacred associations, and to shrink from the idea of colored designs, as inappropriate and unchurchly.

Nevertheless, Polychrome is not only the most beautiful, but the most ancient, and in all respects the most suitable, method of decorating church walls. Colors need not be shunned as "too gay." In the first place, "religious effects" are not necessarily sombre, and secondly, colors, in the hand of one who knows how to employ them, may promote the most profound and solemn emotions.\*

\* Some persons have a curious notion that high colors are out of taste. Nothing can be more absurd. Chromatically speaking, there are three classes of people: 1. *The Savage*, who daub on paint in gaudy patches, thinking only of bright effects. 2. *The Semi-civilized*, who, discerning the grotesque combinations of the poor savage, but not seeing how to do much bet-

Churches, varying as they do in plan, architecture and cost, require corresponding variation in adornments, the object being, in all cases, to employ the available means in the manner most calculated to promote religious emotion in the minds of the worshippers. To this end two things are essential: 1. Excellence and appropriateness of design; 2. Careful, painstaking execution. *Both of these cost money.* Both come, not only from natural endowments, but from long, severe and expensive studies, and what costs large sums to procure, will not be offered at the price of common house painting. Such work should be intrusted to artists of known skill, who, however limited the means placed at their disposal, will always be able to *spend that money to the best advantage.*

Nor need the expense be beyond the ability of the feeblest congregation. There are many ways of tastefully decorating a modest church, by simply tinting the walls and ceiling, and relieving, here and there, by graceful colored designs, suited to the building and the habits and feelings of the congregation. For the simpler forms of worship, the colored designs may be confined to flowers, vines, branches—due regard being had to their symbolic meaning—borders of geometric figures, inscriptions, or the more common monograms and emblems.\* In more imposing structures, the effect sought may be more ambitious. If the building be Gothic—the imitation of vegetable life—as the outlook through nature's arched branches is cerulean in color, and more and more ethereal towards the zenith, so should the treatment of the walls be strong in tone at their base, and slightly modified in strength as the summit is approached. This gives the illusion of loftiness and open space. As Nature carries out her designs in harmony of color, so should the artist endeavor to carry out his design with like harmonious effect in ecclesiastical decoration. As the architecture grows more elaborate, the genius of the decorating artist may have fuller play, using, in addition to everything employed in the simpler churches, whatever combinations of flowers and foliage his fancy may suggest, combined with elaborate emblems, the combination of dots, lines, trefoils, quatrefoils, and nondescript figures peculiar to Gothic ornamentation, and paintings of scenes from Christian history.

The wall decoration should always be provided for before the church is completed, and the plastering should be done in accordance with the directions of the artist.

ter, vote all high colors "vulgar," and suppose "drabs," and "browns," and "quiet" shades only to be in good taste. 8. *The Artistic*, who, seeing that the "quiet" tints are good, also see that bright colors are beautiful as well, and having mastered them, and knowing the appropriate place of each, feel that they can use them at all times, and in all places, so arranged as to convey the impressions they desire.

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First Presbyterian,  
St. Patrick Catholic,  
St. Mary's Catholic,  
Trinity Methodist,  
Church of Messiah, Unitarian,  
St. Paul, Universalist,  
Plymouth Congregational,  
First Baptist,  
Emanuel Presbyterian Church, Milwaukee,  
Methodist Church, Decorah, Iowa,  
Universalist Church, Minneapolis, Minn.,  
Presbyterian Church, Tipton, Iowa,  
Methodist Church, Kendallville, Ind.,

And many others.

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CHICAGO, ILLINOIS.

## Decoration in Wall Paper.\*

THE decoration of walls with hangings of woven fabrics is noticed long before floors were covered with anything better than rushes. In the Middle Ages commenced a beautiful and luxuriant method of *draping* walls, but the material was usually of an expensive nature, and none but the wealthy could indulge in it. This fashion gave great opportunity for the exhibit of artistic taste, as the tapestries were worked by hand, the designs thereby showing more or less the genius of the embroiderer, as did the pottery work of Pallissy, or the silver modelings of Celini.

The advances in manufacture have brought into the market means of beautifying interiors within the reach of the most economical, by the adaptation of paper, whereby elegant, and if properly applied, lasting effects are produced. Unfortunately, in this as in all other professions, there are too many *pretenders* whose labors are not productive of good results. Paper, when properly applied and taken care of, should last twenty years. In older countries, where paper hanging for wall decorations is more general, it is expected to last still longer. This statement is easily explained—keep it clean. A carpet, book, chair, or garment, if left *undusted* for twelve months will be irretrievably ruined; the dust, affected by changes of the atmosphere, slowly but surely eating its way, and getting so firm a hold that extra effort is necessary for its removal, and more or less damage to the neglected material is thus effected. Paper, when properly applied to a wall, is hardly more perishable than the wall itself; and as the face of paper hangings is always covered with color, it is with *color* to deal. Water color, whether applied to a wall direct or first on to paper, and in this shape to the wall, is naturally a surface requiring some care and delicacy of treatment; so, the careful removal of dust, as in other parts of a room, will ensure the lasting of wall and ceiling decorations, of whatever material they may be.

\* This article was furnished by JOHN J. MCGRATH, 174 & 176 State St., Chicago. See, also, articles on Fresco and Symbolism.

Of the practical application of paper to walls, it may be said that very little is known in this country. Other mechanics, it is well known, devote an apprenticeship to their trade, of several years, while it is generally supposed that anybody can be a paper hanger after a week's practice; and in this lies a great mistake. The paper hanger must know the nature of the wall he is to work on, and how to treat it accordingly, as there are numberless injurious ingredients in walls, besides the different substances placed upon them, detrimental to the adhesive part of the work, while the influence of climate and temperature is almost a scientific study. Caution is advised in selecting hangers of known ability, even at higher cost, as the neat, practical and artistic laying on of paper can alone ensure its durability.

The cost of material for papering a church may range from \$35 to \$250, but stock for an average-sized building can be bought, for the ceiling and sides, for from \$75 to \$225, of a very superior and correct character, embracing good quality and artistic merit. The selection for the main paper should be of the simplest pattern (*not* plain tints). A soft stenciling of some geometric form, or conventional treatment of a flower and leaf, is the most successful, while the colors should have a tendency to *warmth*, giving a more welcome appearance than the cold greys and lavenders often sought after. The best tints are buffs, delicate salmons, pinkish drabs, and light browns; with these the brilliancy of the room may be heightened to any extent by the choice of the borders, into which there are some very fine examples of good design now introduced. The ceiling of a place of worship is frequently and absurdly tinted *blue* or *grey*; some go so far as to paint clouds, while others on the field of blue place gold stars in a most natural irregularity. All of this work, through the use of atmospheric colors, is suggestive of *out of doors*, when the very opposite effect is really desired. The upper part or covering should show that it is a covering, and the applying of patterns slightly deficient in warm tones of color, gives the more pleasing results.

In conclusion, let the whole decoration of the church—floors, walls, windows, and chancel included—be thoroughly planned before any part of it is executed. Better than to trust the taste of any one man, it is always wise, when possible, to follow the Old World custom of bringing together the architect and the deorator as a committee, the rarity of genius making it almost impossible to give correctness of detail, except by this wise combining of forces.

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NOTE.—Among the numerous advantages *decorative wall paper* presents over fresco—*Superiority of design* is perhaps the greatest. The local painter may be ever so good a mechanic, but when necessity demands the combination of artist and mechanic, as in the furnishing of public places, and churches more particularly, through the lack of practical and artistical experience in committees, the results are sadly deficient. The designs for decorative papers or borderings are from the hands of the most accomplished artists whose services can only be secured at *their own studios*, and in this way the *most correct drawings* only are collected and manufactured.

***John J. McGrath,***

**174 & 176 State Street, Chicago.**

## Ornamental Tiles for Churches.

**T**ILING, although very common in the Old World, is but just beginning to find its way into general use in American buildings.

The value of ornamental tiles consists in their imperishability. They cannot burn, they will not break; and it is extremely desirable that ornamentation actually incorporated into the walls and floor of a building should be permanent. Their use, for this purpose, is almost a necessity.

Plain tiles are simply very hard bricks of a fine quality, moulded under great pressure, generally an inch or less in thickness, and cut of any size desired, in squares or other geometrical figures. Plain tiles may be of any color.

Glazed tiles are made by dipping the surface of the plain tiles, while very hot, in a melted vitreous preparation, and afterwards allowing them to cool in an oven.

Encaustic tiles are produced by stamping the plain tiles, while yet plastic, with any figure desired, filling the mould thus made with clay of a different color, and burning the completed tile. If the design requires several colors, a separate stamp is required for each.

Enameled tiles are those in which the desired figure is printed upon the plain surface, and then covered with a preparation called "enamel," which, as well as the ground work, may be of any color.

Majolica tiles are those in which the figures, in colored clays, are embossed in relief, upon the plain surface.

Mosaic tiles, as their name indicates, are encaustic or enameled tiles or slabs, in which elaborate designs are worked out with very small *tesserae*, or blocks.

Hand-painted, or "art" tiles, are those on which flowers, vines, animals, scenes,

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or indeed any pictures desired, are actually painted upon the finished surface.

It will be seen that the ornamental effects are produced, either by combining plain tiles of different colors into geometrical figures, or by working small designs upon the separate tiles, or by a combination of both methods.

Ornamental tiles are used for the enrichment of all classes of buildings—both inside and out—and for all kinds of furniture.

Unglazed plain and encaustic tiles, and Mosaics, are suited for pavements. The same, glazed, are used for hearths, and with the enameled, the Majolica, and hand-painted tiles—usually glazed—may be set, in large or small numbers, in walls and furniture.

In no place is the use of ornamental tiling more appropriate than in the decoration of churches. In the figured tiles, the designs, of course, should be of a suitable character, including Arbitrary or Conventional Figures, in keeping with the architecture of the building, Emblems, Monograms, Scenes, Texts, and Memorial Inscriptions. For the last purpose the Majolica tiles are especially useful.

The unglazed plain or encaustic tiles are appropriate for the pavement of all vestibules, and, in edifices of sufficient importance, for the nave and the aisles. The pavements may be laid in plain tiles, in geometrical figures, either wholly, or with figured tiles, or Mosaics, at convenient intervals. In the latter case, if the tiling extends into the body of the church, the figured tiles may be used more freely, and the designs may be of more solemnity in their suggestions, as they approach the chancel.

The pulpits, lecturns, sedilia, and other furniture of the chancel, and the panels and niches in various parts of the church, are often beautifully decorated with hand-painted tiles, while the Enameled, Encaustic and Majolica tiles may be freely used in friezes, panels, dadoes, or indeed wherever ornament is desired.

We have explained the uses of these tiles thus minutely, because they are as yet so little known in interior towns. In quantities such as would be required for ornament only, they do not—except for hand-painted tiles—involve a large outlay, and a little inquiry, in any large city, will readily bring to light persons interested in their sale, who are always prepared to show sheets of painted designs, in colors, and to afford any further information desired.\*

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\* For suggestions as to suitable designs for church purposes, see the articles on Christian Symbolism, Decoration in Fresco, Decoration in Wall Paper, and similar articles in this book.

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WITH a revival of taste for ecclesiastical architecture, has arisen a demand for varied and appropriate designs for fixtures and fittings for lighting purposes, and metal work for furniture and decoration, suited to the eclectic styles now employed in building churches. This branch of art work has engaged the attention of the most cultivated architects and designers; while skillful artists and workmen, as well as costly mechanical appliances, are employed in the production of these accessories to ecclesiastical architecture.

Decorative art ought to have the effect of elevating public taste, and, as applied to churches, should express and gratify religious sentiment and improve individual character. Hence our models, while embodying the very best spirit of the mediæval past, should be accepted chiefly on the ground of intrinsic excellence.

*Corona.*—Chandeliers from an early period were placed in churches, not only for lighting, but also as having a symbolic or mystical meaning. The most noted early examples were suspended from the ceiling in the form of a crown. Hence the name. Important in illuminating the church, it is the emblem of Christ, who is the "Light of the world." The use of the chandelier or corona of artistic design and richly ornamented, and thus often speaking the language of pious sentiment, has the authority of practice in all ages of the church. Their production has employed the highest artistic skill in design, and the best artisans in gold, silver, jewels and enamel. To meet the demands both of refined taste and a reverence for the true spirit, mediæval symbolism and modern practicability combine to produce fixtures for lighting the church, at once beautiful and appropriate in design and economical in cost.

*Standards.*—Authorities have held that the standard is the true form of fixture for lighting the church. For some styles of church architecture this is true, and certainly for the altar it is appropriate and correct in taste, and almost universally adopted. Of fine metal work, usually polished, relieved with colors, and of designs

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suited to the building, the standard constitutes a very beautiful and appropriate lighting arrangement.

*Lecturn.*—The eagle with wings extended usually forms the desk, having reference to St. John, whose gospel carries the aspiring soul to its highest flights. It generally rests upon lions *couchant*, emblematic of the sovereignty of the “Lion of the tribe of Judah.” Elaborate art work and materials have often combined to produce most costly examples. Lecturns, however, of very rich or plain and simple styles, are made of polished brass standards, with book plates pierced and richly engraved.

*Crucifixes.*—Art work in metal finds some of its noblest examples among its contributions to this most interesting department of church accessories. Plain, polished, enameled, jeweled and illuminated, these afford scope for economy, taste, or most expensive adornment.

*Candlesticks.*—What is said of crucifixes, appealing less to sentiment, may be applied to candlesticks.

*Monstrance.*—The usual form is a radiated sun with a transparent pyx, in which the sacrament is exposed on the altar. They are usually made in gold-gilt, silver-gilt, etc.

*Sanctuary, or Perpetual Lamps.*—These are often distinguished for great beauty of design, and are executed in gold-gilt, silver-gilt, enameled and illuminated with jewels, ruby or amber colored vessels for oil, or shades for gas. The injunction to the church, “Let your light shine,” may, in this regard, be obeyed in the use of a very plain and simple or a very costly lamp, as the case of each church may require.

*Pendants, Benediction and Circle Brackets, Procession and Altar Crosses and Desks, Staves, Croziers, Altar and Chancel Rails, Memorial Bronzes, Clocks of Gothic design, etc.,* are among the various styles of fixtures and metal furniture which are executed in all appropriate designs and colors for churches.

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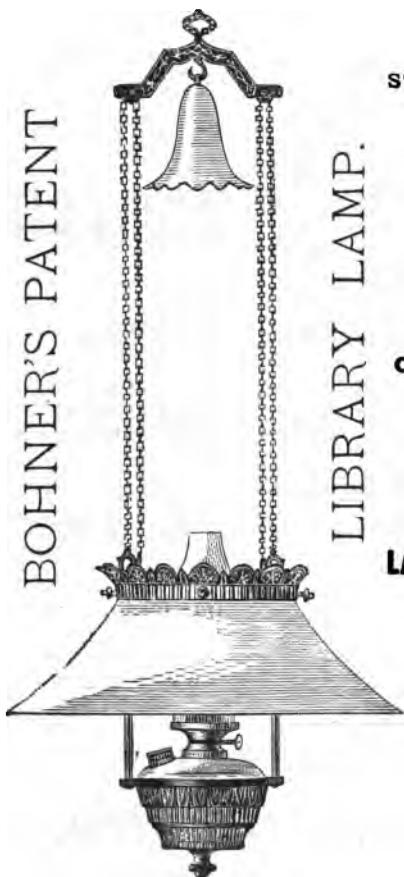
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## Heating by Steam.\*

STEAM heating arrangements are ordinary boilers from which steam is conducted in pipes to the rooms to be warmed. The pipes may be conducted back and forth round the sides of the room, till a sufficient amount of radiating surface is obtained, or the steam may be passed through one or more "coils" or "stacks," placed where most convenient. The pipes must always be so laid as to proceed by a constant rise till the "summit" is reached, from which point they must make a *continuous descent* to the boiler, or other outlet for the water constantly condensed. Neglect of this would result in stagnant water obstructing the passage of the steam and bursting the pipes in freezing weather. The boiler may be placed in the basement, or, for greater safety from fire or accident, in a separate building.

Steam engines are usually worked at a pressure in the boilers of from 40 to 80 pounds to the inch, but a pressure of from 5 to 10 pounds will force sufficient steam through the pipes to warm any building. By steam heating engineers, anything above 15 pounds to the inch is called high pressure, and anything below that, low pressure. High pressure apparatus, like a working steam engine, requires the attention of a competent engineer. Low pressure apparatus can be managed by any intelligent person. The temperature of steam is 212°, but great pressure in the pipes may raise them considerably above that point. At 80 pounds pressure the temperature is 312°. Generally, however, the temperature in the coils is below 212°, slightly diminishing as the distance from the boiler increases. Super-heated steam—that is, steam again passed through the fire—has sometimes been used for heating purposes, but is considered unsafe, as it is very hot, sufficiently so to melt brass. In steam heating apparatus, the great point is to have the supply pipes large enough, and the coils and radiating pipes in sufficient number, depending upon the distance from the boiler, size and position of the room, number and character of the openings. Low pressure apparatus requires larger supply pipes and more

\* The data for this article are supplied by JAS. R. WILLIAMS, Architect, 85 Dearborn Street, Chicago.

coils. There is no invariable ratio between the radiating surface of the pipes and the cubic feet in the rooms.

The main problem to be solved in connection with steam heat is that of ventilation. Stoves, furnaces and fire-places either force into the room supplies of new air, which may be made to drive out the old, or create an upward and outward draft of the old air, which induces an inward flow of the new. Neither steam heat nor hot water heat, in their simplest forms, do either. A steam coil placed in the middle of a room heats the air just about it, which rises, cools, settles, is warmed again, and so moves in an endless round. This plan is generally called direct radiation. The air, under such circumstances, soon becomes foul and deathly. An evident improvement is to place the coil by the window, which may be opened, and fresh air allowed to blow upon the coil, provision being made elsewhere to carry away the foul air. This plan has evidently some disadvantages, and an improvement upon it is to admit the air to the coil through an opening in the wall, opened or closed by a register. Both of these plans are modifications of direct radiation.

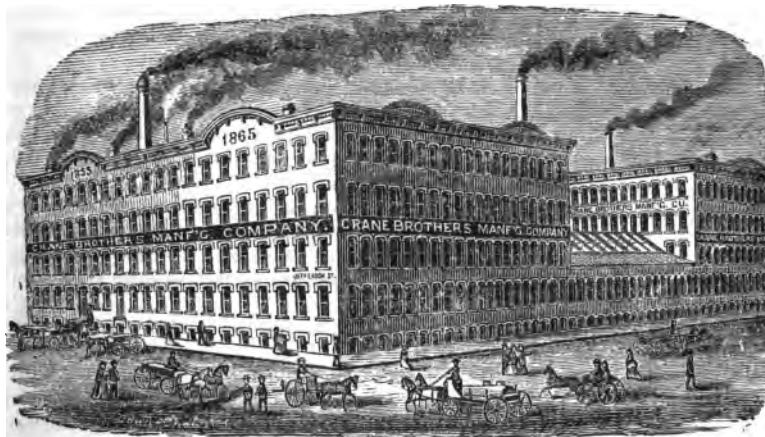
In indirect radiation the coils are placed below the rooms to be warmed, and pure air from outside brought to them, to be conducted through pipes, as from hot air furnaces, to the rooms. In this case the coils may all be placed together, or concentrated in one, with pipes leading to the several rooms. In such cases it is important to have the inlet for pure air ample, lest in cold weather the supply be insufficient and the pipes leading to the upper rooms rob the others. An improvement upon this is to place each coil by itself, with separate inlet and hot air pipe. Still another improvement—when the space can be spared between stories—is to place the coils immediately under the rooms to be warmed, with cold air ducts leading to each from without the building.

By these—or some other—means, it is absolutely necessary to provide for ventilation in connection with steam heat. To neglect it is to administer slow poison to every occupant of the rooms. In doing this, be sure to make the inlets larger than the outlets, and both large enough, and be sure not to take the air from the basements. It is almost certain to be foul. In ventilating, it is always better to take the air some distance from the ground, as it is there more free from miasma and other impurities. There is no practical difficulty in drawing it from the sides, or even the roof, of the building.

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Steam Warming and Ventilating Engineers  
FOR  
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A properly constructed Steam Apparatus is the most effective, and really the cheapest method of warming public buildings, and is fast superceding Hot Air Furnaces, which burn up the air passing over their red-hot plates and poison it with noxious gasses from their leaky joints.

The additional first cost of Steam Warming apparatus is more than compensated by its being cleaner, more uniform in heating, more easily cared for, more durable, consuming less fuel, immeasurably safer, and more efficient in ventilating.

In churches, especially, it is desirable, on grounds of safety, and affords the best possible system of ventilation, viz.: By tiers or "gangs of pipes, suspended boxes from

joists under the whole auditorium. Taking the air from without, there are small openings and gratings in the floor of each pew through which warm, fresh air passes in a continuous volume, effectually driving out the cold and foul air, and the products of combustion from gas jets or lamps. By this plan the ventilation is at the ceiling instead of the floor, and the temperature maintained alike throughout the room from top to bottom. The fresh air is breathed as soon as it enters, and after respiration, is not permitted to settle, but at once forced upward through the ceiling ventilators into the tower. The lower part of the room is heated first instead of last, requiring only about three hours' time, thus making a great saving in fuel, and avoiding the dangerous custom of leaving red-hot furnaces to blaze, unattended, all Saturday night. The basement, if used, should be warmed by separate pipes, placed by the walls and supplied with fresh air from without.

When necessary to make such use of the basement that the space cannot be spared for the complete tiers of pipes, with the necessary cold air ducts, the best plan is to place ornamental radiators, or coils, along the walls of the auditorium, and to combine with them indirect radiation from compact coils, suspended in boxes from the basement ceiling, taking the air from without through air ducts.

In the latter case the ventilation is from the bottom of the room through suitable ventilating shafts kept warm enough to induce a draft, either by special coils, or if possible by using the heat of the smoke pipe. There should be registers at the floor and ceiling, the latter to be used for cooling the room, and letting out the products of combustion from gas jets or lamps.

Ventilating shafts, air ducts and boxes for coils, should be made air tight except at the necessary openings.

Boilers should be placed as low as possible, or below the lowest coil, that the water of condensation may return to them direct. The locomotive boiler is the most desirable when hard coal is used, and it is sometimes necessary to use it, even with soft coal where there is not sufficient height to admit the tubular boiler with its setting.

A low pressure apparatus is positively safe from explosion, it being impossible to raise the pressure above 15 pounds to the square inch, while the apparatus is constructed to withstand from 100 to 150 pounds.

We are prepared to do all kinds of steam fitting at the shortest notice, and in any part of the country. In Chicago, we refer to the First Congregational Church, Trinity Episcopal Church, Plymouth Congregational Church, and others for which we have supplied Steam Warming apparatus.

We solicit correspondence, and will furnish plans and estimates on application. Any information in our power, or any suggestions will be cheerfully furnished to those contemplating the use of steam heat.

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Steam Heating and Ventilating Works,  
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Branch at Indianapolis.

CHICAGO.

## Hot Air Furnaces.

A HOT air furnace is substantially a common heating stove inclosed in a covered and inverted cylinder, usually of galvanized iron. The "stove," however, is called the "fire box," and the cylinder the "case." In the larger furnaces the case is of brick. The space between the fire box and the case varies from one or two inches to a foot or more. The fire box is made of many shapes, but always has openings on one side, projecting through the case, to receive the fuel and give access to the ash box, and on the other side a flue, also projecting through the case, to carry off the smoke. At the bottom of the case, usually on two sides, are apertures to admit cold air, which should be brought, in wooden or other ducts, from without the building. At the top of the case are openings through which the heated air is carried, in tin pipes, to the rooms to be warmed. Upon starting a fire, the air between the fire box and the case becomes heated and rises, through the hot air pipes, to the rooms above, and is replaced by the cold air from the ducts below. As the fire box becomes hotter, the air is moved more rapidly. During a cold winter day, when the fire box is kept very hot, there will be a strong and constant upward current of air.

The simplest form for the fire box would be round or square, with no projections save those necessary to receive the fuel and carry off the smoke and ashes. Conceive such a plain box, of such a size that a bushel of coal put into it will maintain, under certain conditions, 8 square feet of iron surface at a given heat for a given time. The air from the ducts, passing over it, becomes heated, and passes into the rooms at a certain rate. Now, if a fire box can be contrived, of such form that a bushel of coal will maintain, under the same conditions, 16 square feet of surface at a red heat for the same period, and at the same time a sufficiently increased quantity of cold air be directed to the proper places, the capacity of the furnace *will be doubled*. It is this end which furnace builders endeavor to accomplish, by means of ingenious combinations of "flues," "domes," and various other contrivances, all really constituting part of the fire box, for increasing the RADIATING SURFACE, and conducting the cold air over it; and it is in this, and various minor particulars, that one *good* furnace differs from

another good one, the main point being the success attained in solving the problem of *how to heat the most air with the least fuel*.

A proper regard for economy and even safety requires that furnaces should be of sufficient size and in sufficient number. In attempting to heat rooms, in extreme cold weather, with furnaces of insufficient radiating surface, they are often kept heated so intensely, and for so long a period, as to be entirely *burned out* and destroyed in a single season. Besides this, many buildings are burned down every year by this over-heating of furnaces too small for the work expected of them; and finally it positively requires less fuel to heat a room with a furnace as large as is necessary, than to attempt the same work with a furnace a size too small.

Besides the variations in *plan*, which may exist between furnaces, all of which are entirely satisfactory, there are certain grave defects in *manufacture* which are to be guarded against, and which must especially be looked for in furnaces which are offered *remarkably cheap*. Of two furnaces of substantially the same outward appearance when set up, one may necessarily be sold at double the price of the other.

1. As furnaces are subjected to a very high degree of heat, it is essential to their durability, that they be made *very heavy*, and of *the best of iron*.

2. To keep the heat where it is wanted, and prevent, in coal furnaces, the escape of gas (a very common and unendurable fault), the various parts must be *perfectly fitted, strongly secured* in their places, and so heavy as *not to warp*.

3. There is great difference in the quality and durability of the cases and pipes.

A really first-class furnace requires a greatly increased expense in the weight of castings, quality of iron, smoothness of castings—depending upon the quality of iron, skill of moulder, care in rejecting imperfect pieces, and hand work in trimming and fitting—and is a source of constantly increased expense wherever it goes, requiring double the men to handle it, and in general subjected to double freights, risk and care. Such a furnace, however, when once well set, should last for years, doing its work completely, and costing nothing, or next to nothing, for repairs, while a furnace bought at a hundred dollars less, even if built upon a ~~good~~ plan, may be a constant source of expense and trouble, and finally wear out in half the proper time.

But the best furnaces, built and set in the most substantial manner, sometimes utterly fail to do their work. There are three principal occasions for these failures:

1. *Insufficient chimney flues.* Chimney flues are seldom built large enough to readily carry off the smoke and gases from the furnaces. The flues of church chim-

neys ought to be from 8x12 inches to 12 inches square, and smoothly plastered on the inside. The consequences of too small flues are poor draft and the escape of gas.

2. *Insufficient supply of cold air.* Although a well heated fire box will generally induce a draft of cold air through the ducts, it sometimes happens, in cold weather, that strong winds, blowing away *from the entrances to the ducts*, will prevent the outside air from entering them, and so—no matter how hot the furnace may be—the supply of hot air is cut off from the rooms to be warmed. The remedy is a sufficient number of cold air ducts, so placed that, from whatever quarter the wind blows, it will fill some of them. Winds from the *cold quarters* are the surest to enter the ducts.

3. *Poorly built and "shackly" walls and windows.* These, in cold windy weather—especially in our northwestern prairie towns, and in connection with unsuitable chimney flues and cold air ducts—often admit such blasts of icy wind as actually to stop the supply of hot air from the registers, and even turn the draft *the other way*. It is very common to see one side of a public building rendered untenable for days together, from this cause, and the blame laid upon the furnace which should be borne by faithless contractors or shiftless building committees. The only remedy for this is to make the walls and windows tight.

*Placing the Heater.* Hot air seeks to go *straight up*. The heater should therefore be placed as nearly as possible under the register, if there be only one, or if there be more than one, then where it will be as central as possible. It is difficult to carry hot air any great distance in horizontal pipes. When necessary to attempt it, the pipes should be much larger than otherwise necessary, and also made *double*, with an air space between of not less than  $\frac{1}{8}$  of an inch.

*Placing the Registers.*—When the hot air enters a room, it rises immediately to the ceiling, spreads over its whole extent, and the room is gradually warmed from the ceiling down. One large register will warm the room as well as two small ones. The only advantage of multiplying registers is to provide more places for warming the feet. A register in a corner warms a room as readily as if placed elsewhere. The registers should be so placed as to avoid the necessity of *angles* in the pipes. Much heat is lost by placing hot air pipes in outside walls.

*Ventilation.*—The principal impurity in the air of a crowded room is carbonic acid gas, which is heavier than air, and sinks to the bottom of the room. There should be openings at the *floor*, leading into ducts for conveying away this gas, and the cold air which will be forced out as the hot air accumulates at the ceiling. If the room is too hot, it should be relieved by ventilators placed near the ceiling.

# BOYNTON'S Gas-Tight Furnaces

For Heating Churches, Schools, Dwellings, &c.  
THE BEST SANITARY FURNACES  
EVER OFFERED THE PUBLIC!

These Furnaces are  
constructed

With Few Joints!

and are perfectly

GAS-TIGHT!

Most important features in Furnaces when  
Health is considered.



DURABLE

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POWERFUL.

Castings are very  
heavy, and constructed  
with reference to

GREAT  
RADIATING  
SURFACE.

There are more than sixty different kinds and sizes of the Boynton Furnaces—the largest and most complete list in the United States. We have all sizes and kinds. We have them

**ESPECIALLY ADAPTED TO HARD COAL, SOFT COAL & WOOD.**

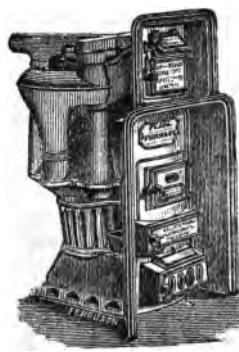
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**HARD OR SOFT COAL.** Both Brick-Set and Portable Forms.  
Keep a Continuous Fire and are Easily Managed.

The BOYNTON FURNACES have been favorably known and extensively used for the past twenty years, and have proved to be the most Durable, Substantial and Powerful Furnaces ever sold. Call and Examine, or send for Circulars. Address

**BLISS & WALLS, 82 Lake Street, Chicago.**

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MANUFACTURERS OF

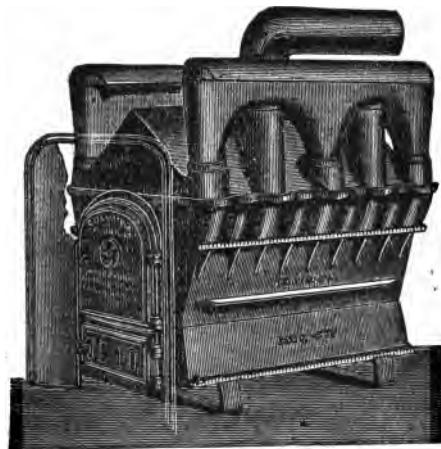
The "PEARL" Heater,  
A Self-Feeder, for  
ANTHRACITE COAL.



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The "Pearl."  
The "COLUMBIA," a Powerful Wood Heater.

These HEATERS are especially adapted for warming  
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*Our Stock of Carpets, in patterns designed especially for Church Purposes, is at all times Complete.*

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**MATTING & LINOLEUM**  
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*Church Cushions of all Kinds & Pulpit Trimmings Made to Order.*

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**Churches will be Furnished at the Lowest Wholesale Prices.**

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**ORDERS CAREFULLY AND PROMPTLY ATTENDED TO.**

## Church Organs.

THE Pipe Organ, with its rich and sustained tones, has, by common consent, for centuries been distinguished as the instrument specially suited for church use. Every church should have such an instrument. Only a few may afford large and complicated organs, but complete and useful instruments, simple and portable in construction, are now made at prices that bring them within the reach of every church.

The simplest organ has but one stop, and gives but one set of tones, or but one note to each key. In this respect it is like a piano, and, like a piano, it is complete in itself. It is no less so because, *unlike* a piano, an organ admits of being constructed so as to have many notes to each key, and even several key-boards, including one (and sometimes two) for the feet. Such an organ, of but one stop, should comprise a full diapason—"Open Diapason," as it is technically called. This is the foundation stop of all organs, and, properly voiced, gives the full, pure organ tone. With the mechanical accessories of swell, pedal, keys, coupling, &c., such an organ is appropriate to the needs and means of more than half the village churches in the country. It will sustain a congregation in singing, and meet the ordinary requirements of church services.

If, in connection with the "Open Diapason," a "Dulciana" stop, for quiet and delicate interludes and accompaniments, be added—thus giving an organ of two stops, or one with two sets of tones—we advance to an organ of the second size.

For the third size, we would add a sub-bass, giving firm, deep, pervading tones. This sub-bass may be arranged so that it may be played exclusively by the feet, on the pedal keys, or used also by the hands, on the manual keys. By adding stop after stop in the foregoing manner, we can increase the resources and capabilities of an organ to any extent, which the size of the church, the nature of the service, and the musical taste of the people may demand. But an organ is not incomplete, though

small, so long as it fulfills its purpose, and performs its specific functions. Neither is artistic excellence inconsistent with the smallest and simplest organ.

We state this, because, in the minds of some people, the idea exists that an organ of small cost must, of necessity, be imperfect, and of cheap material and poor work.

In purchasing organs, the amount of money to be expended is the main restriction with nearly every church. But it is not enough for the organ builder to know how much will be paid, in order to advise understandingly about the number and kind of stops the organ should have. He should know the size of the church, its proportions and architectural features, the position the organ is to have, the size and shape of the place for it, and the nature of the service wherein it will have to bear its part.

These, conjointly with the amount of the money to be paid, must determine the plan of the organ, its size, powers and general constitution, the balancing of the stops and the proportions of the scales, the classification of tone, qualities, and the relation of one part to the other. The advantages of a large organ apply, to a great extent, to a small church, especially in the direction of stops of delicate and moderate tone, and those available for accompanying a quartette or a small chorus, and where a great variety of beautiful combinations and charming effects may be obtained from the many stops.

A moderately large church, of good acoustic proportions, allows the best effect of even small organs—sometimes of the most delicate stops—but the best effect of a large organ is only obtained in a large church.

The proper situation of an organ in the church is a matter of importance, as upon this very much depends the effectiveness of the instrument. A finely-voiced and well-toned organ, upon which the builder has exercised his utmost skill, may, by an unfavorable position, be deprived of a great portion of its dignity and grandeur of tone.

The enrichment and augmentation produced by *resonance*, and the inexpressibly charming, buoyant, lingering effect imparted by *echo*, must depend upon the building and the surroundings, and cannot be given by the organ-builder.

The best position is where the organ can be *central*, *elevated*, *unconfined* and have *ample room*.

If the organ is elevated, the tone is more generally diffused throughout the church, and is not so overpowering to that portion of the congregation near it. The

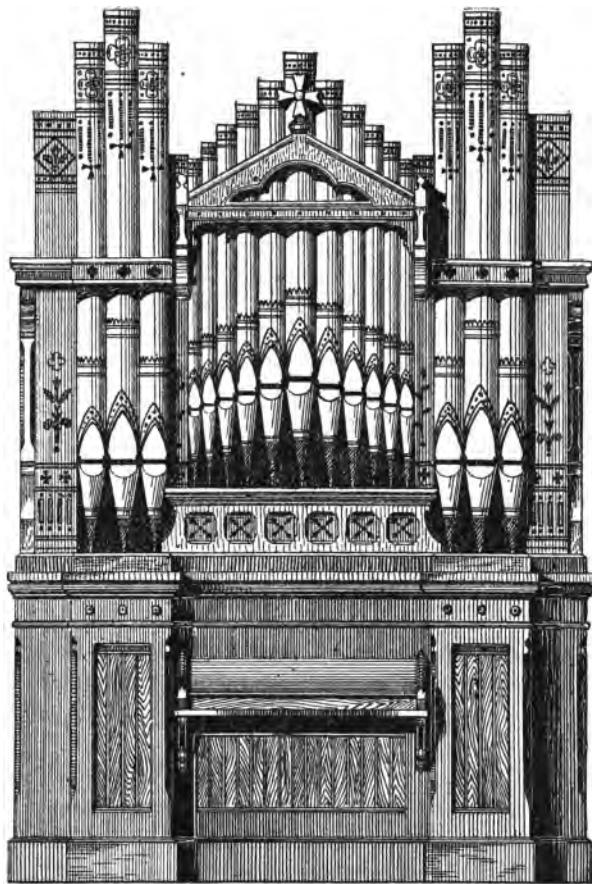
height above the gallery or platform should be sufficient for the construction of the organ, and allow space above, when possible, which gives a mellowing and beneficial effect. When an organ is crowded in under a low ceiling or roof, the tone is apt to have a severe and disintegrated character, especially displeasing to the organist and singers. An organ so placed is more liable to be out of tune, by the effect of the higher temperature which surrounds the pipes standing close up to the ceiling. A free circulation of air is desirable through and around an organ, not only to prevent dampness, but to have the temperature of all the parts as even as possible. This is especially desirable when the organ is placed in a recess where communication from the interior of the instrument to the body of the church is cut off, except through the casing in front.

The effect upon the tones of an organ by its being in a recess is to somewhat subdue its power; but by the skill and judgment of the builder, in the arrangement of the parts and in the character of voicing, this can in a great measure be obviated, and the effect converted into a beneficial result by giving a certain chasteness and charm of distance to the character of the instrument.

It is particularly desirable that an organ should not be crowded, especially when placed within a recess, but that room for a passage on each side of it be allowed. It is also well to have sufficient room in depth to allow a passage behind the organ, whether placed in a recess or not.

The prices of the best organ builders throughout the country differ but little. Those who make thoroughly good, honest work, and who have the ability and skill, combined with artistic appreciation, to voice and finish an organ properly, agree very nearly in their prices; and in proportion as they depart from a correct standard of excellency in conception, execution, material, and tone, the prices will diminish.

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*E. & G. G. Hook & Hastings,*  
**BOSTON, MASS..**  
**Church (Pipe) Organs.**

115

**E. & G. G. Hook & Hastings,**

BOSTON, MASS.,

*BUILDERS OF SUPERIOR*

# **CHURCH ORGANS**

**OF ALL SIZES, ALSO**

## **PIPE ORGANS**

**For Halls, Schools and Parlors.**

*ESTABLISHED IN 1829.*

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We invite attention to the general merits of our work, to our claims as superior Organ builders, and to the successful result of our recent efforts to devise and construct Pipe Organs that shall be simple, durable, inexpensive, portable, beautiful and effective.

We are able to furnish Church Organs at \$400 and upwards, which possess a fullness, richness and beauty truly surprising, giving the true diapason tone from large, sealed metal pipes.

We make particular mention of these small Organs, because the ideas have prevailed that we build only the largest instruments, and that these small Organs must necessarily be imperfect and unsatisfactory.

We have received the highest award in every instance.

In production and capacity, our establishment is unequalled in this or any country.

**We furnish Pipe Organs of all sizes, one grade—always the best.**

**Descriptive circulars** and specifications with information on all subjects connected with our art, cheerfully furnished.

**Organs costing \$400 to \$1,200** always on hand. In cost, beauty of tone, appearance, general effectiveness and finish, an equally attractive assortment can nowhere else be found.

**Our prices** are always the lowest, consistent with the quality of the work given and guaranteed.

**All our work** is warranted perfect in every respect.

**We possess** and apply every real improvement. Our relations with eminent European builders, the employment of experts trained in their factories, the ingenuity and skill of our American workmen, our constant endeavor to advance the standard of our work, has enabled us to obtain and to hold the highest place in our art.

**Our large business** enables us to systemize our work under the direction of experienced foremen, each proficient in his own department, thus securing great economy and perfect work.

**By superior voicing** our Organs have greater power and effectiveness, more beauty, and more distinctive characteristics of tone.

**Hundreds of Churches**, in every part of the country, have been supplied with our Organs.

**Many of our Organs** have each in their turn, at the time of their completion, been the largest ever made in America, and now have a world-wide reputation.

**Second-hand Organs** taken at fair valuation and sold at low prices.

**Water Motors** furnished.

**Tuning**, adjusting and repairing promptly done at just rates.

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# MASON & HAMLIN,



**Cabinet Organs.**

TWO  
**HIGHEST**  
MEDALS  
AND  
**DIPLOMA OF HONOR,**  
AT VIENNA, 1873.

WINNERS  
OF THE  
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AT  
PARIS, 1867.



## STILL ANOTHER EUROPEAN TRIUMPH.

At the INDUSTRIAL EXPOSITION, held this year (1875) in Linz, the Capital of Upper Austria, the Mason & Hamlin Cabinet Organs have just been awarded the Grand Silver Medal of Honor, being the highest award for instruments of this class.

*Constantly Exhibited at the Principal Industrial Expositions of America, they have always received the Highest Awards.*

THE MASON & HAMLIN ORGAN CO. have the pleasure of announcing as now ready, several of the most important improvements ever made. The *Plano Harp Cabinet Organ* is an exquisite combination, the introduction of which marks a new era in the manufacture of instruments of this class. The *Improved Voix Celeste* is an improvement upon previous stops of this name or general character, which must delight all who hear it. The *Etageré Organ* presents an appropriate union at once useful and elegant.

*Many new styles of Organs just introduced, varying from plain to highly ornate; embracing a higher degree of excellence than has been before attained in instruments of the class.*

The Mason & Hamlin Cabinet Organs are now sold for monthly or quarterly payments, or are rented until rent pays for them.

Illustrated catalogue and testimonial circular—documents of great interest to all who contemplate purchasing—sent free on application.



**MASON & HAMLIN**  
**Organ Company**  
BOSTON—NEW YORK.

80 & 82 Adams St., CHICAGO.

118



## Church Bells.

FEW people—unless, possibly, some practical bell founders—can think of bells without associating therewith thoughts of poetry, or at least of sentiment. Towards the pleasant voiced bell, which for years has summoned them to worship, there can be no doubt that a feeling akin to affection grows up in the hearts of devout believers. This feeling is constantly displayed in words and deeds, and in countless allusions in devotional poetry. It crops out especially in commendatory letters to bell founders, bestowed alike, it appears, upon good and evil, and showing that, as fond parents still love their erring children, so unwise congregations may lavish their affection upon bad bells; only that when the day comes for some neighboring congregation of wiser or wealthier Christians to place in their tower a genuine BELL, the scales fall from their eyes, or rather from their ears, and they discover, alas! that all their enthusiasm has been lavished upon an IRON POT!

Now nothing can be more unsentimental than to dissect and analyze sentiment, but it is true that as sound and wholesome thought depends upon the condition of the tissues of the brain, so all real poetry in the sound of bells depends upon their composition and form. And into this it may be wise for intending purchasers to look.

The qualities which endear bells to mankind may be analyzed as—

1. Volume of tone—that they may be heard afar off.
2. Quality of tone—that when heard, they may fill the ear with a pure, full, rich sound, which enchains and delights, and satisfies the sense.
3. Prolongation of tone—that this pure, rich, satisfying tone may not cease too suddenly, but as the skillful ringer holds the bell poised in air, its vibrations may continue, but grow less, as the sweet note gradually dies away in a soft diminuendo.

To attain these ends has been the ambition of the bell founders of all generations, and the degree of success depends upon—

1. The metals of which the bells are composed.
2. The form in which they are cast.
3. The manner and position in which they are mounted.

As to the first point, bells may be divided into two classes:

1. Those which are solely or principally composed of copper and tin.
2. Those which are solely or principally composed of cast iron. These bells are not *advertised* as iron bells, but under various other names, which we do not need to mention here, but which are familiar to the readers of the bell advertising literature of the day. The means of judging the metals of which any variety of bells is composed, may always be found in the price which the broken bells will bring *in cash*—not in exchange for new bells of the same kind. If the bells will not bring more than the price of old iron at the nearest foundry, it may safely be assumed that there is nothing but old iron in them.

The copper and tin, or “bell metal” bells, are composed—the best of them—approximately, of four parts of copper to one of tin. They may vary:

1. In using impure, or inferior, or old scrap copper, instead of the purest and best pig metal.
2. By the infusion of zinc (usually worth about seven cents per pound) or other base metal with the copper and tin.

In this way it will be readily seen how so-called “bell metal” bells may differ in quality and cost, and against this adulteration—which is sure to impair the ringing qualities of the bells—the ordinary purchaser has no protection, except in the good faith of the manufacturer. In cases where professed “bell metal” bells are offered at a remarkably low price, their composition should be carefully inquired into.

As to the proper form of bells, that is a matter to be determined by experience, and by a study of the laws of acoustics. By the precise form, and the relative thickness of various parts, bell founders regulate not only the general ringing qualities of the bell, but its *key*, or *pitch*. In this particular the best dependence is upon the reputation and experience of the *founder*. Long experience is the best guaranty.

As to the mountings, there is certainly a great difference in them, especially in those for use with the larger bells, but their differences and relative value can usually be very well apprehended by any one whose attention is called to the subject, and the matter may be dismissed with the suggestion that it be not overlooked, or neglected in the purchase of the bell.

# Meneely's Bells.

ESTABLISHED IN 1826.



## BELLS FOR CHURCHES, ACADEMIES, FACTORIES, &c.

Of which more have been made at this Establishment than at all the other foundries in the country combined. More than eight hundred unsolicited testimonials have been received by us within the last five years.

Warranty given with every bell, mounted with Conical Rotary Yoke (patent 1860 and 1868), the most recent and desirable Bell Fixture in use.

An Illustrated Catalogue sent free upon application to

**MENEELY & CO.,**  
WEST TROY, N. Y.

## STEEL AMALGAM BELLS.

OUR opinions upon the subject of Bells are freely expressed elsewhere. To the opinions and advice there given we, of course, adhere. There is no doubt that the copper-and-tin bells are, from every point of view, the most desirable. But we know that as there has been heretofore, so there will be hereafter, large numbers of the cheaper bells sold to parties who think that the comparatively high price of the copper-and-tin bells places them beyond their reach. To such persons, we offer the STEEL AMALGAM BELLS as *by far* the best substitute we know. We deal in these bells ourselves, and can furnish them promptly of any size and weight.



To obtain the fullest tones from any bell, it is important that the belfry be closed above and below the bell, and *the sides open*, so that the sound may be unobstructed. The larger the bell, the fuller and richer the tone.

We can furnish, when ordered, Tolling Hammers and Fixtures for the larger Bells. When used for Church Bells, this is a great convenience.

### *Prices---Complete, with Hangings, as shown in the Cuts.*

Diameter.	Weight, Bell and Mounting.	Price.	Diameter.	Bell.	Bell and Mounting.	Price.	
18 inches.....	100 lbs.....	\$14.00	32 inches...	850 lbs...	550 lbs.....	95.00	
20 inches.....	130 lbs.....	20.00	36 inches...	550 lbs...	800 lbs.....	135.00	
24 inches.....	190 lbs.....	30.00	40 inches...	750 lbs...	1050 lbs.....	175.00	
Diameter.	Bell.	Bell and Mounting.	44 inches...	1000 lbs...	1350 lbs.....	235.00	
26 inches.....	175 lbs...	825 lbs.....	50.00	48 inches...	1800 lbs...	1800 lbs.....	300.00
28 inches.....	225 lbs...	875 lbs.....	65.00				

## Tower Clocks.

IT is a prime requisite for punctuality, and all the virtues and happiness of which punctuality is the parent, that the clocks and watches of a community agree with each other, and with the true time. For the attainment of this end, we know no means except the placing a correct time keeper where its face may be seen, or its voice be heard, of all people.

But such a clock, to accomplish its purpose, must be a *good* time-keeper. When we wish to set or regulate our time-pieces, we are not satisfied with an *approach* to accuracy. We want the correct time—the time to the second, not the minute—and an unvarying standard. Nor is it sufficient to know that our clock is periodically examined, and set, and at those times to be relied upon. We want a time-piece such that at any hour of day or night, we may look up into its honest face and read the truth.

Public clocks are placed in high towers, difficult of access, and often cared for gratuitously by some busy watchmaker, who dislikes to be continually leaving his business and taking long journeys in the air to tinker a clock which *will not* go right. So, after a few months of watchfulness, the novelty wears off, the zeal of the curator dies away, and the clock in the tower, left to the devices of its own sweet will, presently makes havoc of the time-pieces of its deluded followers. Tower clocks may easily—and often do—vary several seconds in 24 hours. Every housekeeper tries to make his own clock go like it, and so, scarcely any two time-pieces in the community agree or are accurate.

Such are the results which follow from relying upon *cheap tower clocks*. After considerable observation, it is our advice, to communities who feel that they cannot afford to buy a *good* clock, to postpone their purchase till they can. A poor town clock is a delusion and a snare. If the blind lead the blind, both fall into the ditch.

And as to this matter we have the following suggestions:

1. *Do not put too much trust in your local jeweler.* In the first place he is almost always interested. There are but few makers of tower clocks in this country, and, of them, some make all jewelers their "agents," proposing certain definite commissions for all clocks sold, while others—and of these some of the best—hold out no such inducements to the "trade," but do all their business with their customers direct. In such cases the jeweler—even if he give up his commission to the town—almost always expects and receives compensation, in some form, from the maker, for his "influence," and, in any event, would be more than human if he were not biased in favor of parties with whom he is constantly dealing, and against those with whom he deals less, and who do not favor him with an offer of commissions. In the second place, the jeweler has but little special experience. Tower clocks do not, like watches and house clocks, pass daily under his hands, for repair, and, unless he has had the care of one, is but little more competent to judge of its merits than an ordinary intelligent machinist, who will give it his attention. The best way for all purchasers of tower clocks is to find out the names of *all the makers*, and correspond with them *direct*. These remarks are made with no unfriendly feeling to the "trade," but because we are sure that *undue dependence* upon them in a matter in which they have no special knowledge, is the cause of much of the trouble with tower clocks in *small towns*.

2. *Don't take the cheapest because it is cheap.* Some watches are worth more than others, and some makers of watches make *only* those of a high quality. It is the same with tower clocks. Cheap watches are a necessity, and, with proper care, are sufficiently useful in their place, but cheaply made tower clocks serve *no* good purpose.

3. *Insist that the clock do not vary more than ten seconds per week with a common pendulum, or ten seconds per month with a compensating pendulum.*

4. *See that no working part of the movement is made of anything less desirable than hardened hammered brass, or fine cast-steel, and that all teeth are cut, not cast.*

5. Make no contract except for a clock delivered and put up by its maker. Use black dials of a diameter *one tenth the distance from the ground to their center*, with gilded hands and figures. Get a *good bell* for it to strike upon. Last, but not least, get the best man possible to care for it, and *pay him for his time*, so that you can complain if he does not do his duty.

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*We are prepared to manufacture clocks to strike on one or more bells, and to furnish illuminated dials if desired.*

*Parties wishing any information, either as regards the prices of Clocks or the best method for arranging the Tower for a Clock and Bell, can obtain it by addressing a line to us, stating what information they require.*

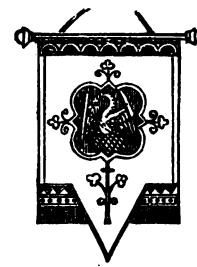
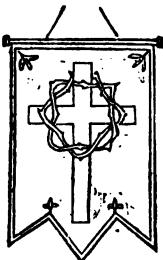
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**B**ANNERS and Transparencies for Sunday School occasions, will be furnished at short notice. We can make no prices for these goods, the cost of which will vary indefinitely, according to the amount and character of the work and material. Banners are of white muslin, or of white or colored silk, and are lettered with any text desired, to which any emblem or figure may be added.

Banners of *about* 24x30 inches, in muslin, with fringe and pole complete, will cost *about* as follows, the sums named being merely approximations to assist superintendents and committees to make their first estimates of expenses. Muslin Banners 24x30 inches, painted and lettered to suit purchasers, with fringe and pole complete, say \$8.00 to \$12.00. Gold lettering extra, say \$3.00 to \$5.00. Emblems or figures extra, say \$8.00 to \$10.00. Silk Banners 24x30 inches, lettered in gold, with pole and gold fringe, will cost from \$12.00 to \$35.00. Silk Banners 6x8 feet, complete, with large pictures, cost from \$150.00 to \$200.00. These estimates are for better work than can be obtained in most villages and small cities at any price.

Actual estimates will be promptly furnished to any design, or designs will be sent on application.

# PORTABLE BLACKBOARDS.

*With a perfect slate surface, Black or Green.*



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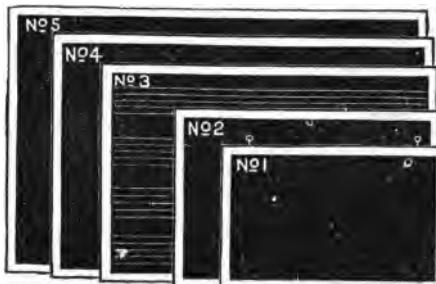
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*Made with Holbrook's Liquid Slating.*

The Blackboard has now become an indispensable article, not only to School Teachers and Sabbath School Superintendents, but also to all classes of Lecturers and Professors.

Superintendents of Sabbath Schools will find the style "A" Blackboard peculiarly adapted to their wants, as the illustrations may be drawn at leisure during the week, and the Board then rolled up and carried in the hand.

<i>Sizes and Prices.</i>	
STYLE A, [See cut above.]	
No. 1—2x2 feet,.....	\$ .60
No. 2—3x3 feet,.....	1.35
No. 3—3x4 feet,.....	1.80
No. 4—3x5 feet,.....	2.25
No. 5—3x6 feet,.....	2.70
No. 6—3x7 feet,.....	3.15
No. 7—4x5 feet,.....	3.00
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No. 9—4x7 feet,.....	4.20
Music Lines extra.....	1.00



Any size to order, 15 cents per square foot.

Above are mounted on rollers, with hooks and rings for hanging up.

Style B.

### *Double Reversible Blackboards.*



Style C.

**STYLE B**—Blackboards of Wood, with Ash or Walnut Frame.

[See cut on preceding page.]

No. 1—2 x 8 feet, .....	\$ 3.50
No. 2—2½ x 8½ feet, .....	5.25
No. 3—3 x 4½ feet, .....	7.00
No. 4—3½ x 5 feet, .....	9.50
No. 5—4 x 6 feet, .....	12.00

Music Lines extra, [shown on No. 3] 1.00

**STYLE C.** Same as Style B, Mounted on Stand.

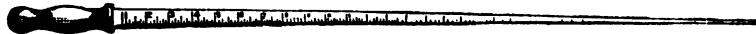
No. 1—3 x 8½ feet, with Stand .....	\$10.00
No. 2—4 x 4 feet, with Stand .....	12.00
No. 3—4½ x 5 feet, with Stand .....	16.00
Music Lines extra.....	1.00

Slated Paper, per square yard.....	\$1.00.
Slated Cloth, per square yard.....	2.00.
Slated on both sides.	

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30 cents each. Without Scale, 25 cents each.

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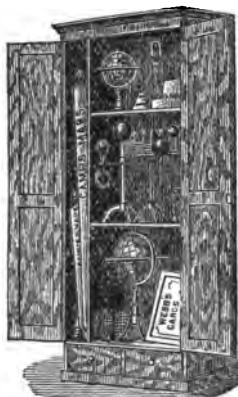
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